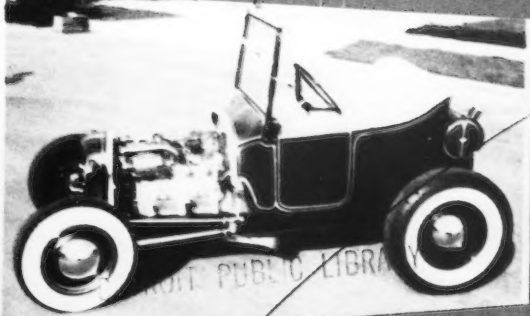


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V.P. #2

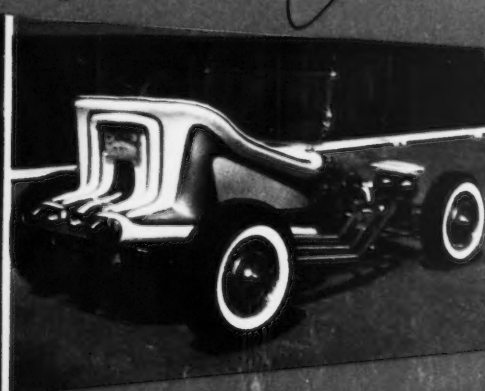
JUNE 1960 25¢



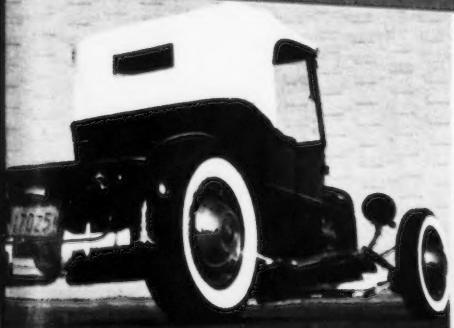
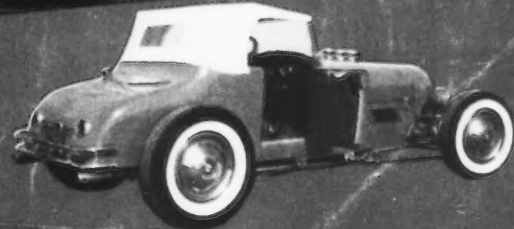
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APR 28 1960

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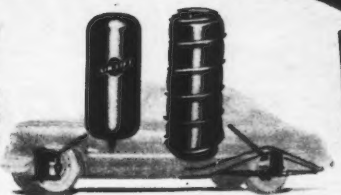
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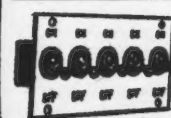


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CAR CRAFT

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Volume 8  
Published Monthly  
Number 2

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## cover

Too numerous to list individually, the colorful array of roadsters on this month's cover are fine examples of the exciting things presently being done to the "backbone of hot rodding"—the street rod.

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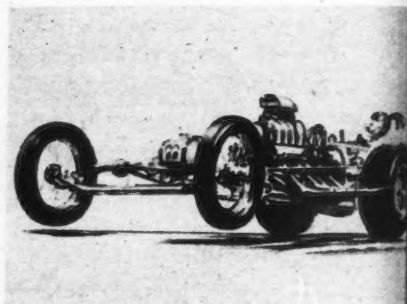


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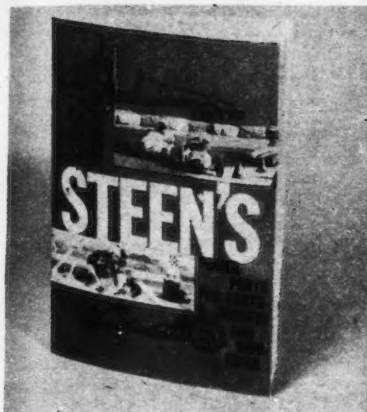


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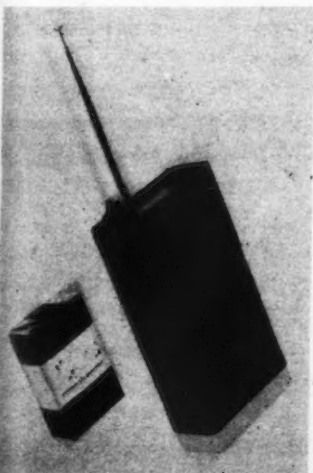
#### KART CATALOG

Power equipment for karts, quarter midgets, and the mini-bikes can be found in this new catalog published by one of the top speed shops. 46 pages of parts, items to choose from. \$1. Refunded on orders of \$10.00 or more. Steens Power Parts, Dept. CC, 19 E. Valley Blvd., Alhambra, Calif.



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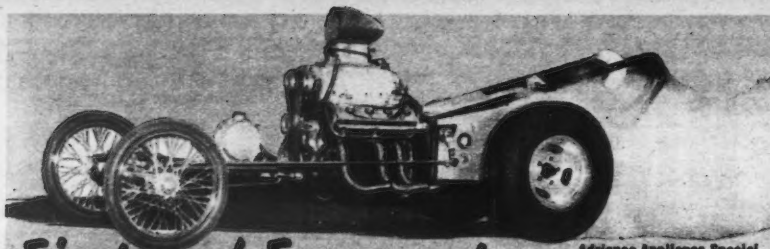


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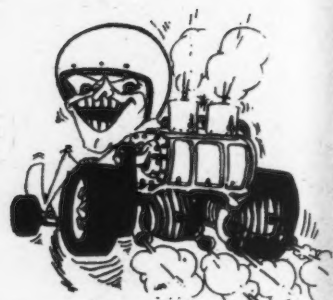
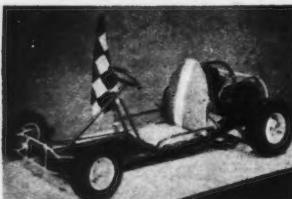
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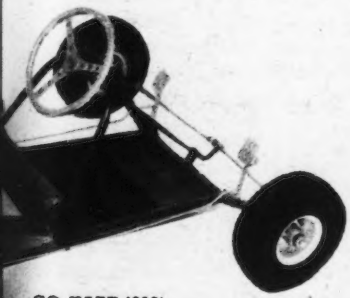
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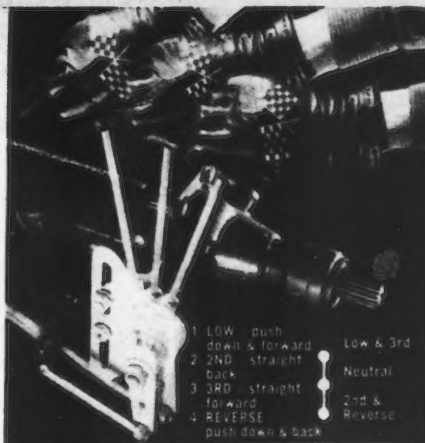
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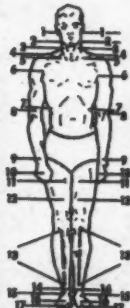
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# SPEAKING

of

the editor



**RODDING**—seems to be taking on a real double-look lately, attested to by the heavy swing to dual engine motivation witnessed at the drags. The record performances of these cars were subjects of an extensive report in our May issue. And again it was our pleasure to be most timely with the feature. No sooner did that issue reach your newsstands, than Tommy Ivo and his twin-Buick powered dragster chalked up another unbelievable speed mark for a quarter mile gas-burner—170 mph with an 8.91 e.t. The double-look is again in the offering once a close study is made of the photo above. You might call it Al Palamides' answer to a really-big supercharger. Of course, the center of attraction is his newly designed manifold that is capable of harnessing some thirty pounds of boost with such efficiency and simplicity that you might hear some drag racers exclaim—"Why didn't I think of that?" One thing for sure—Palamides' new manifold-dual-blower design could well be the future answer to drag racing's 200 mph barrier. Dual stage supercharging isn't new with hot rodders, but past innovations of one blower pushing through another have fallen short of their expected performance due to both mechanical and design deficiencies. Next month we will have on hand a full report of Al's new and revolutionary dual-blower kit. Its drive system and versatility for almost all late OHV engines leaves very little to be desired. If a blower is going to be your big shot for this year's NHRA National Drags, then how 'bout it—anyone for a 1271 blower?

**CUSTOM**—coverage has been a heavy assignment for all CAR CRAFT editorial field representatives these past few months in order that we could present a complete roundup of show-cars of all descriptions, and more important—from all areas. Now that the material is in, you are about to be treated to all the latest styles, fads, and efforts of customizers from Hartford to Oakland—from Vancouver to Miami. It promises to be an interesting pictorial and I think you will discover as we did that custom torch work is approaching a universal plane. Customs of the East, West, North and South no longer carry their individual area trademarks of construction as they have in years past, but rather appear to be from a similar mold retaining their sleek standards for appearance. In addition to this report on show-cars the country over, our monthly 'restyle' feature will also carry a surprise. It will incorporate a touch of 'radical' customizing along with the standard 'mild' treatment of all particular models selected. This new look will be capably handled by the pen of artist, Larry Evans; editorial descriptions by Jim Gilbert.

**KARTING**—progresses more toward a strict competition sense as each month rolls by. Being that this is the case—what could be more appropriate than an educational 'buyers guide' on nothing but those karts that fit the rigorous requirements of racing? Our karting specialist, Bud Lang, promises you an interesting report. One of comparison and call-outs concerning current racing models, and their production line construction...til the July issue. —Dick Day



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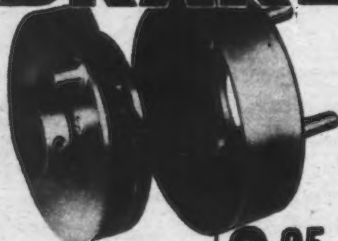
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# LETTERS

## ENGLISH FAN

Dear Sir:

I am a regular reader of your magazine and am extremely interested in your American hot rods. I am now a teacher in Sheffield and my after school activities have been more or less restricted, however when I was at college I always had an American car. In this country an American car is either a sign of wealth or the hobby of a car maniac. I had many friends and we all used to club together and go to the local pubs piling over a dozen of us into my 'battle-wagon' as the tutors used to call them, especially the Jeep I used to have.



When I read of the things the people over in your country do to their cars I regret ever buying an English car, I have just bought an Austin A 30 but it is just a means to get me to school and back and most of the fun has gone out of my motoring.

I have had a '47 Mercury, a '48 Buick drophead, a '49 Buick, a '38 Buick (Canada) and I finished up with what I think was a '47 Oldsmobile convertible. I say I think because the car was registered in this country in late '48 and the original date of make wasn't given in the registration book.

While at college I was fortunate enough to make friends with some racing drivers in Leeds and in my spare time I worked at the garage (they sell cars as well). This gave me the opportunity to drive practically all makes of cars going through the American range, European Mercedes 300 SL, Jags 2.4, 3.4, M VII, XK 120, 140, 150, Roll's, MG's, TR's, Austin Healey—the lot, even up to the rac-

ing cars they had up for sale including the Frazer-Nash that used to belong to Tony Brooks.

It is only now when I have had time to settle down and read some motor magazines that I realize how much I miss it. It has always been my ambition to visit America for a holiday and see what it really is like over there, one hears so many stories, that I would like to see for myself. If I can possibly afford it I will try and get over this summer holiday, however that is awhile away yet.

I hope you will read this letter and may possibly find space to write a little about it in your magazine in hope that one of your readers might write to me and let me have some information as to Hot Rod Building and possibly send me some photographs, etc.

Thanking you in anticipation of your allowing me to use your paper as a medium of contact.

—Brian Ward  
6 Green Cross, Dronfield,  
1W. Sheffield  
Derbyshire, England

We're always happy to hear from car enthusiasts from overseas. It seems Mr. Ward has lived a very automotive-full life. We've given his complete address in hopes that a few of Car Craft's readers will communicate with him.—Ed.

## MISSING A ZERO

Dear Sir:

I have just finished reading your January '60 issue but was unable to put it down even after reading it from cover to cover. This was because of your article on Roth's fiberglass roadster, Excaliber. I couldn't help wondering whether the money in the rod was lacking a zero or if it really was \$800. Could you inform me? His roadster looks just as fine or better than Norm Grabowski's \$8000 roadster.

—Bill Muth  
Pgh., Pa.

No, Bill, there isn't a zero missing. 90% of the work was performed by Mr. Roth and this accounts for a great discount in total price. \$800 is the amount of money which he invested in the Excaliber or, as it is now known, the Outlaw. You can't begin to count the amount of time and personal work that went into the car.

CAR CRAFT



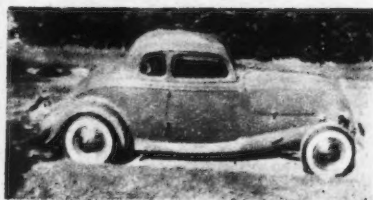
If it were done by a custom shop, then we're sure that the \$8000 mark might be attained. No reference to Grabowski's rod or any other show vehicle, but many times a custom's value is gauged at, say \$6000 although the builder only invested \$2000 in cash. The \$4000 difference is usually chalked-up to the owner's time and work which he has devoted to the automobile.

Remember also that shortcuts and 'deals' (though this sounds under-the-tableish) can account to a small actual outlay of money for work. Others, not able to work out a shortcut method, end up paying the full tariff for their work. Most people help each other out in some manner or another if it is possible. The same goes for the construction of show cars, hot rods or customs. An exchange of work or material or trading engines, equipment, etc., is common in the custom trade. An upholsterer will stitch an interior for a customizer in exchange for a little metalwork on his car. They both go hand-in-hand and both get the work performed that they desired. A man such as Ed Roth, who is in the custom car profession, naturally can construct a fabulous car like the Outlaw for a fraction of the price it costs the average individual. Bear this in mind perchance a similar situation should arise again.

#### THE PURPLE PASSION RETURNS

Dear Sir:

I am enclosing \$3.00 to subscribe to your fine magazine, CAR CRAFT. I have been a reader of your magazine for many years, but I never got around to subscribe until now. The new big issue convinced me that I didn't want to miss a single month. I was stationed in the Army at San Antonio, Texas and bought the '33 Ford coupe which was on the cover of CAR CRAFT's December issue, 1953. About the only change which was made is in the front end grille. I am sending you a few pictures of it. I want to put a new purple paint job on it this winter, as they still call it the Purple Passion in San Antonio.



I brought it back to Indiana after my discharge last January. Later on, I would like to install a big OHV engine. Would I have to buy an adaptor plate to install a late model Olds? I have a '48 Merc with a '39 Ford gear box, with Zephyr gears running now.

— Ron Deffenbaugh  
Marion, Indiana

Yes, Ron, you would have to get an adaptor. The type depends on the engine and trans you will use.

We're glad to hear they still remember our feature from years back.—Ed.

JUNE, 1960

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### ENGINEERING

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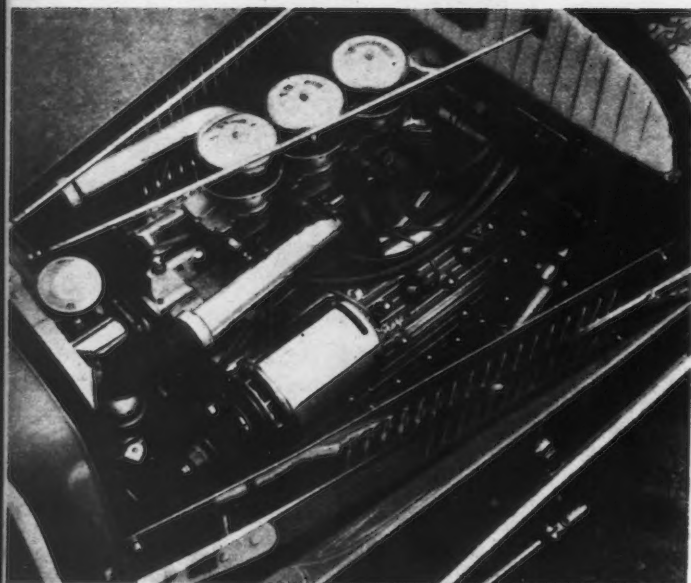
# RETURN OF THE ROADSTERS

OWNER

John Rasmussen

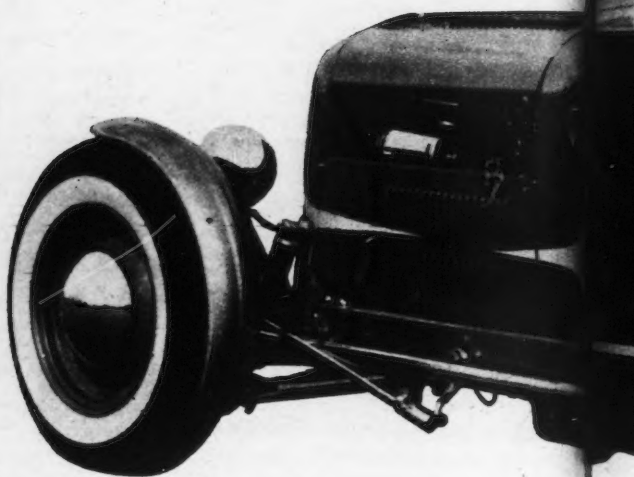
MODEL

'32 Ford

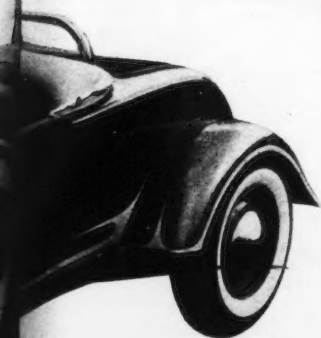


Nestled snugly between louvered side panels and upholstered firewall is a 296 cubic inch '48 Mercury engine. Power boosting equipment includes Navarro manifold with triple carbs, Sharp heads, Howard shaft, Zephyr ignition.

Attractive interior was upholstered by L. A.'s Jack McNeil in silver blue & white Naugahyde. Dash panel is molded deuce piece with gauges Stewart-Warner marine products. Fur-covered steering wheel is pirated from a '55 T-Bird.



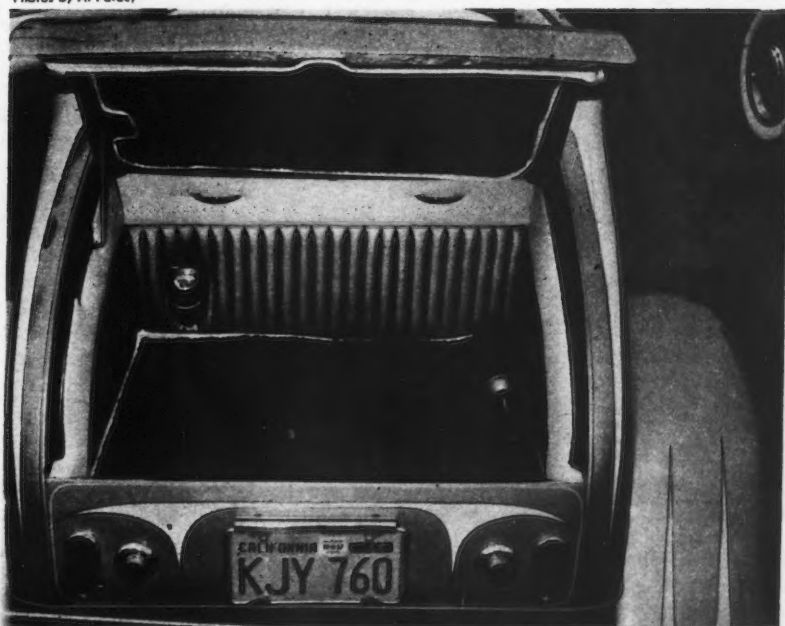
Filled cowl supports specially constructed frame & brackets for slightly chopped windshield. Hood panels are louvered. Reworked shell is '32 Ford; cycle fenders are run up front. Interesting feature is front license plate mount which is constructed of an antenna, two bases. Baldy caps are used.



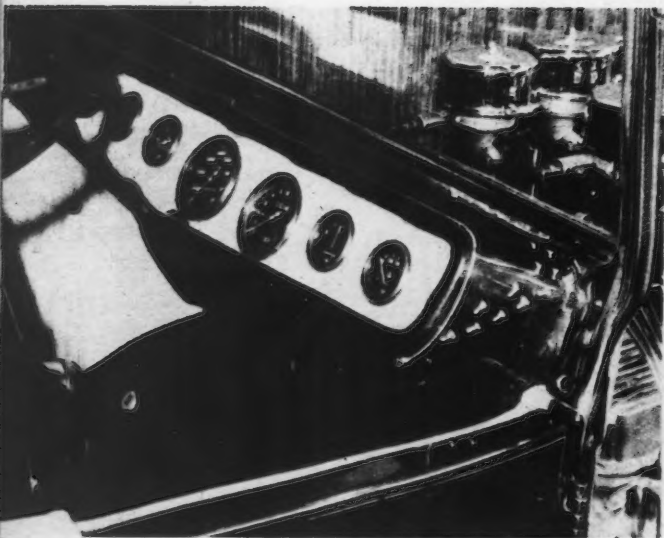
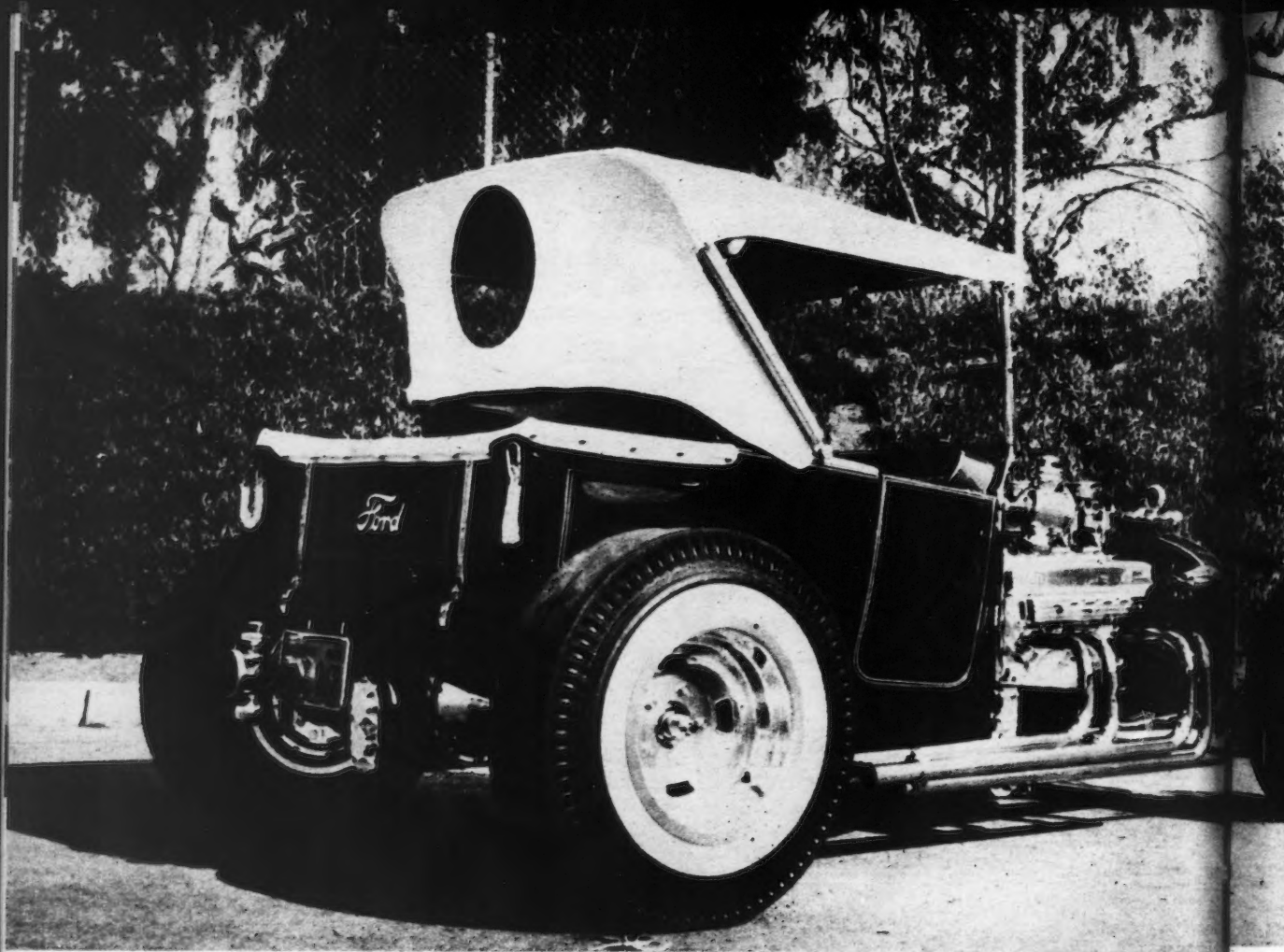
Photos by Al Palacy

TOP • Beautiful metallic blue and white scalloped '29 A-V8 is pride and joy of John Rasmussen, Los Angeles, Calif. Bobbed rear fenders, flat stock rear bumper, rear pan mounted exhaust pipes are sharp. Brakes all around are '40 Ford; battery mounted behind seat.

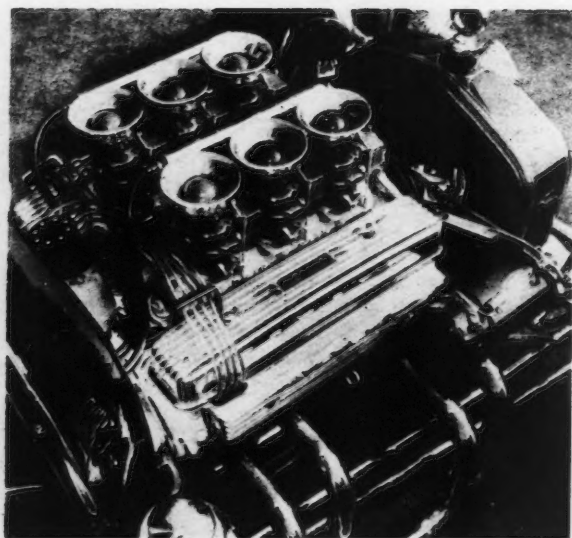
A necessity for showcars now, trunk of Rasmussen's rod is stitched in corresponding motif to that of the cockpit. Fuel filler pipe is routed through the forward trunk panel of \$3000 roadster.







With white Naugahyde upholstery work by Ken Ferris of Beverly Hills, Calif., cockpit is place of beauty. Popular racing wheel is used, dash specially molded, panel recessed.



None too conservative mill is bored and stroked 392 cubic inch '56 Buick with Iskenderian cam, Jahns pistons, Weiland manifold with six Stromberg 97 carbs, Scintilla ignition.

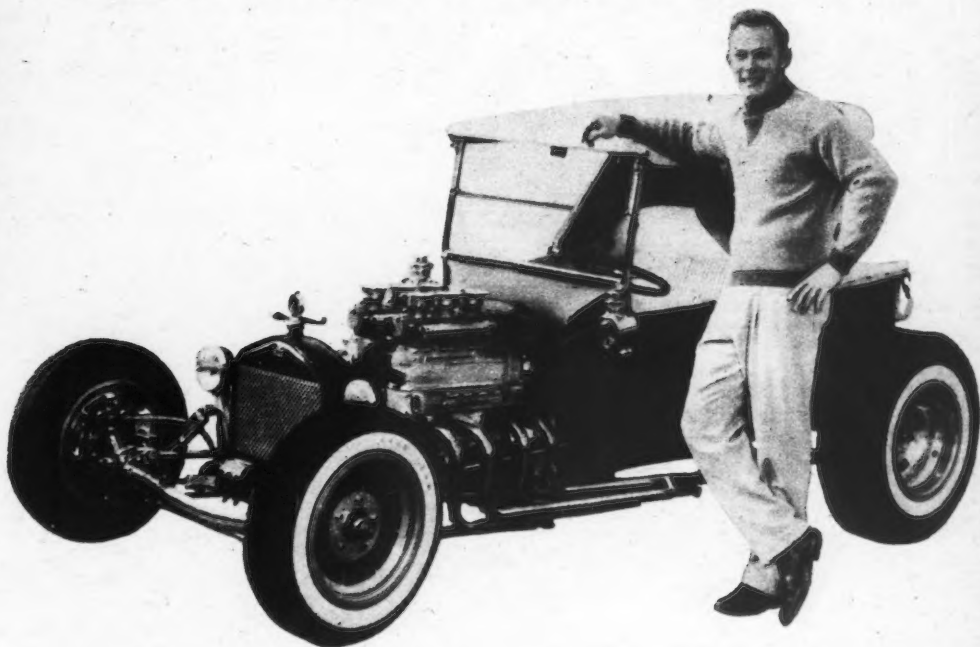
# RETURN OF THE ROADSTERS

OWNER

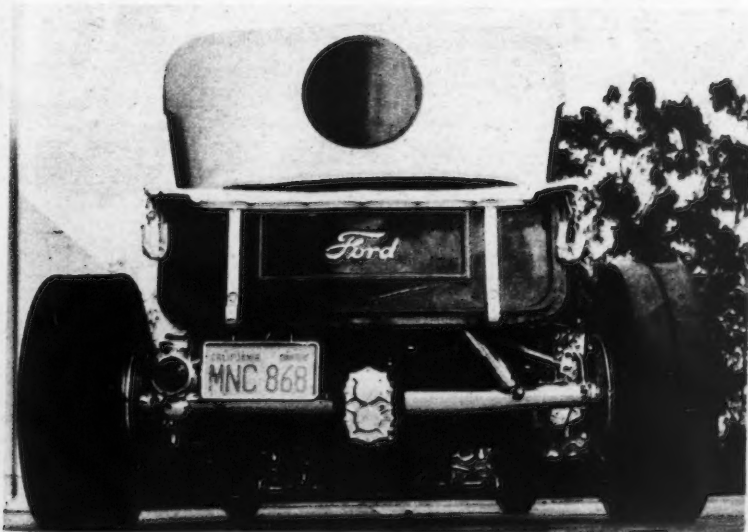
MODEL

Owned by Bill Roland, Gardena, California, this '24 T on '31 Ford rails is "star" of many movies and TV shows. With top chopped 4", channeled 3½", this rod-pickup is real winner.

Painted dark metallic blue, the roadster has a shortened bed in rear, tractor seal beams, waffle-patterned grille insert screen. Front axle mounts special tow bar bracket for shows.



Photos by Bill Roland



Chromed '48 Ford axle with Halibrand q.c. rear end using 3.78 gears is shortened 22", snubbed with Rambler shocks, sits betwixt mag wheel mounted slicks. Leaf spring is chromed; Lincoln brakes and backing plates are utilized.

JUNE, 1960



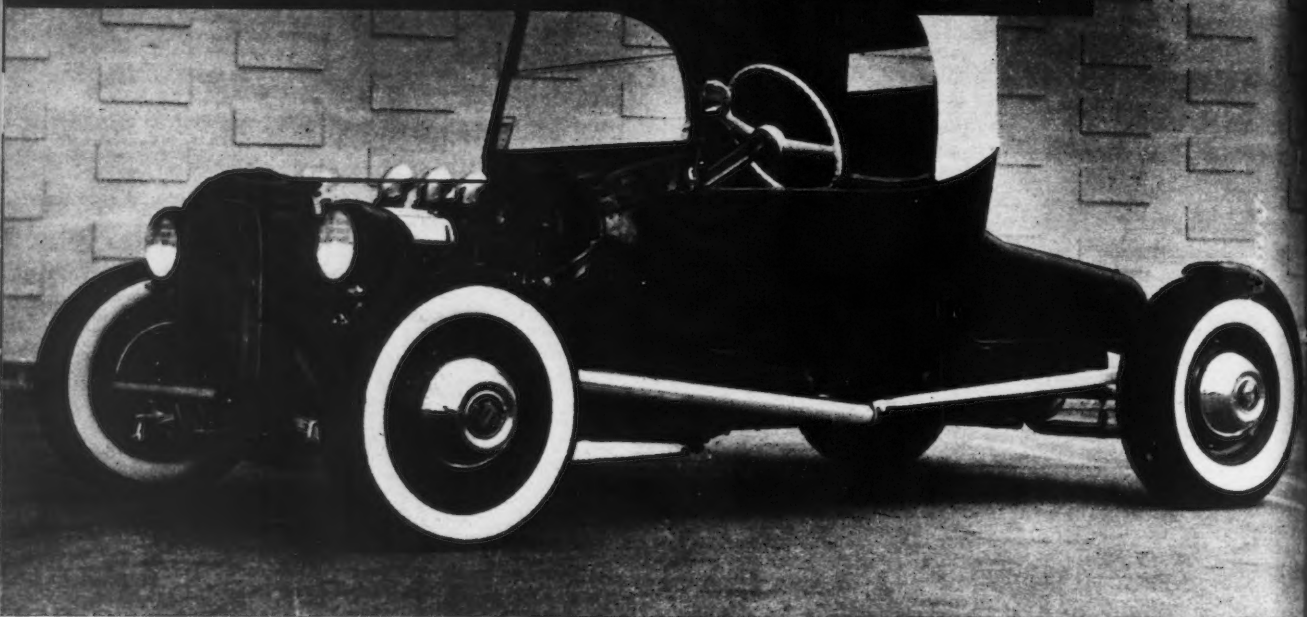
Tubular front axle is from '39 Ford V8-60, short shocks are Jaguar components, Ford spindles reworked for late Lincoln brakes.

CONTINUED



# RETURN OF THE ROADSTERS

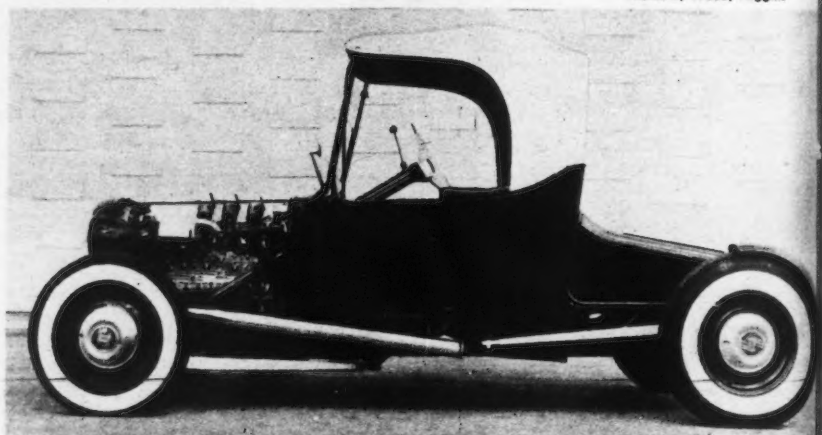
OWNER  
Vic Curlett  
MODEL  
'24 Ford



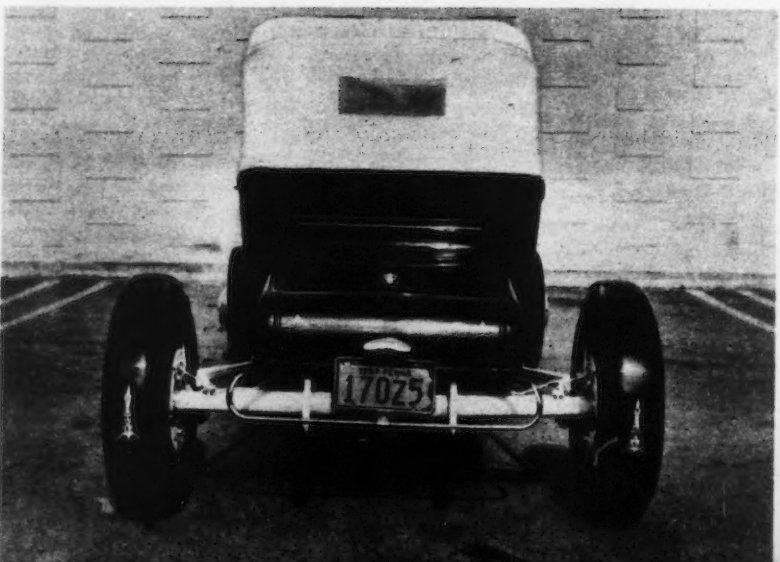
Vic Curlett, Philadelphia, Pa. student is owner of this '24 Model 'T' Ford. With zeed frame, channeled body, the 'T' has sectioned '32 shell, '46 Ford front end and wheels with safety hubs. Stock windshield is used on roadster.

Photos by Woody Higgins

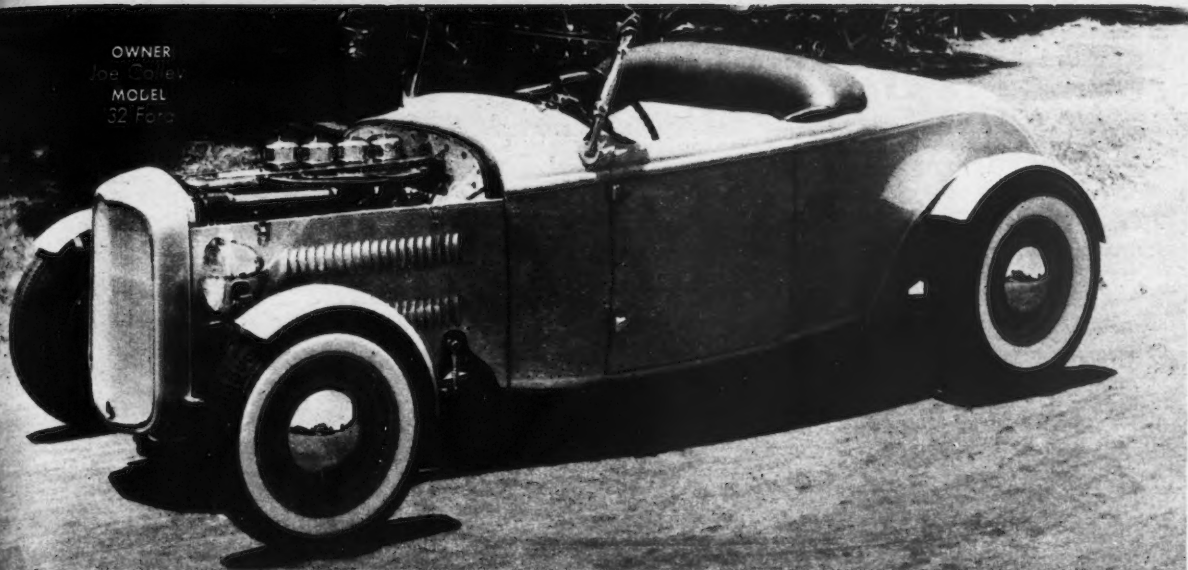
High ragtop is removed for weekend drag strip assault. Zephyr gears transmit power from Ford 59L engine with over-sized valves, Edmunds heads, triple 97 carbs. Dropped front axle gives no noticeable rake to Philly show winner.



Rear end has '54 Buick taillights, nerf iron, spare tire covers for fenders. Axle is '34 Ford with gear ratio: 3.78. Deck lid is removed for roll bar—a required piece of equipment for drags. Stewart Warner gauges are featured.

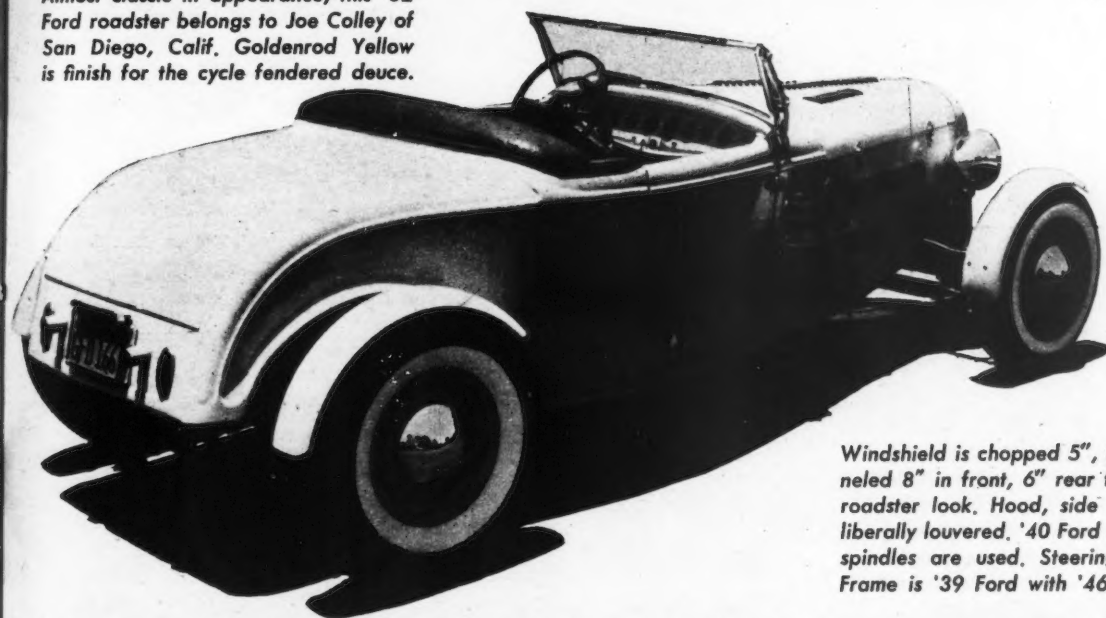


OWNER  
Joe Colley  
MODEL  
'32 Ford



Almost classic in appearance, this '32 Ford roadster belongs to Joe Colley of San Diego, Calif. Goldenrod Yellow is finish for the cycle fendered deuce.

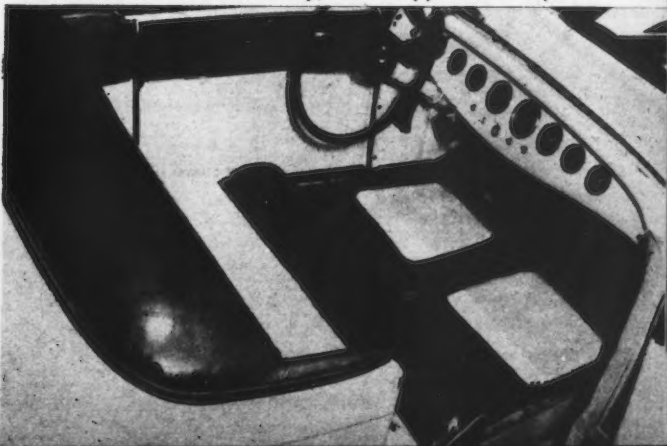
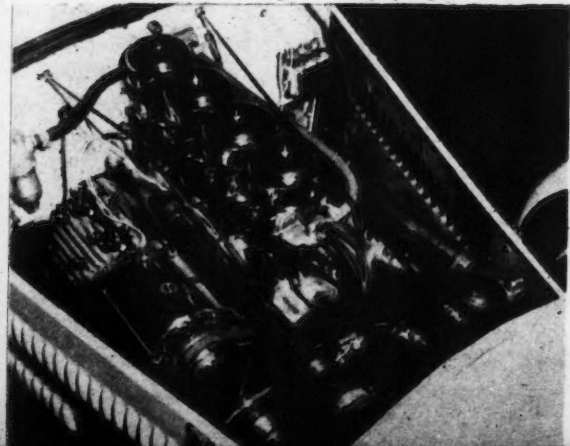
Photos by Bob Hardee



Windshield is chopped 5", body channeled 8" in front, 6" rear for popular roadster look. Hood, side panels are liberally louvered. '40 Ford brakes and spindles are used. Steering is stock. Frame is '39 Ford with '46 rear axle.

Colley's car still retains modified '48 Ford engine that displaces 276 cubes through  $\frac{1}{8}$  larger bore,  $4\frac{1}{8}$ " stroke. Olds valves, Weber cam, Jahns pistons, Edelbrock heads & manifold with four Stromberg 97's, Zephyr ignition are run.

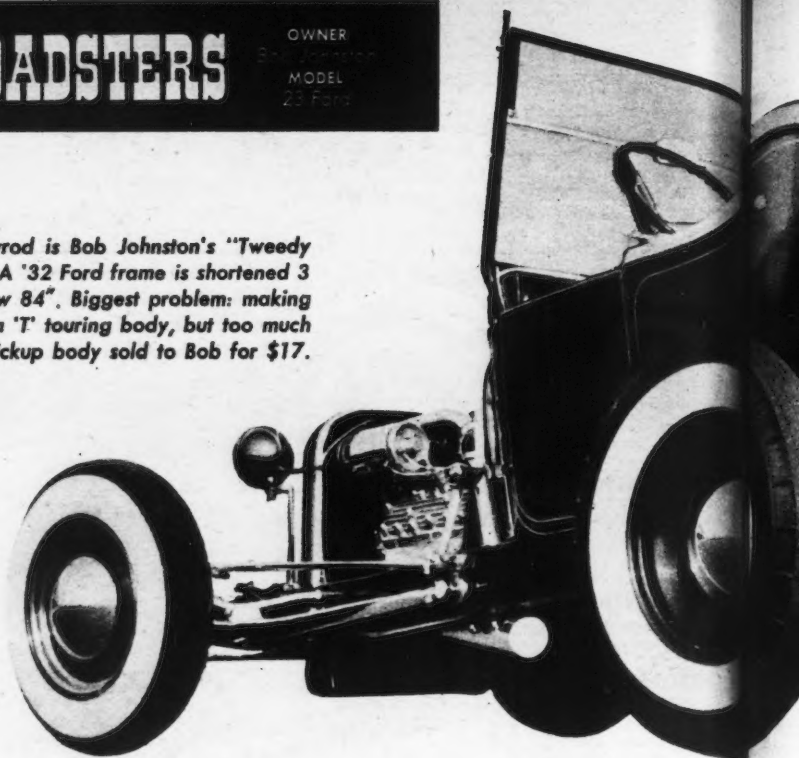
Channeling necessitated reworked seats that later were covered in red and white Naugahyde. Filled dash has Stewart-Warner instruments, '40 Ford steering wheel is added. This is the second hot rod for Colley, first: chopped '32 coupe.



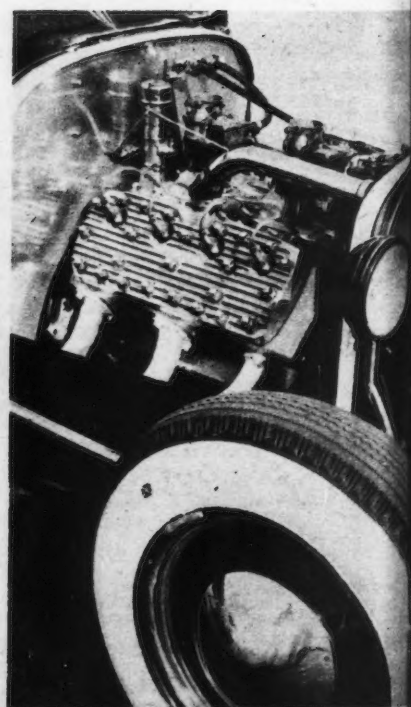
# RETURN OF THE ROADSTERS

OWNER  
Bob Johnston  
MODEL  
'23 Ford

An extremely popular southern California showrod is Bob Johnston's "Tweedy Pie", a '23 Ford painted Royal Metallic Purple. A '32 Ford frame is shortened 3 feet, and narrowed 1 1/2 feet. Wheelbase is now 84". Biggest problem: making everything fit. The original idea was adapting a 'T' touring body, but too much work meant discarding it and adapting a 'T' pickup body sold to Bob for \$17.



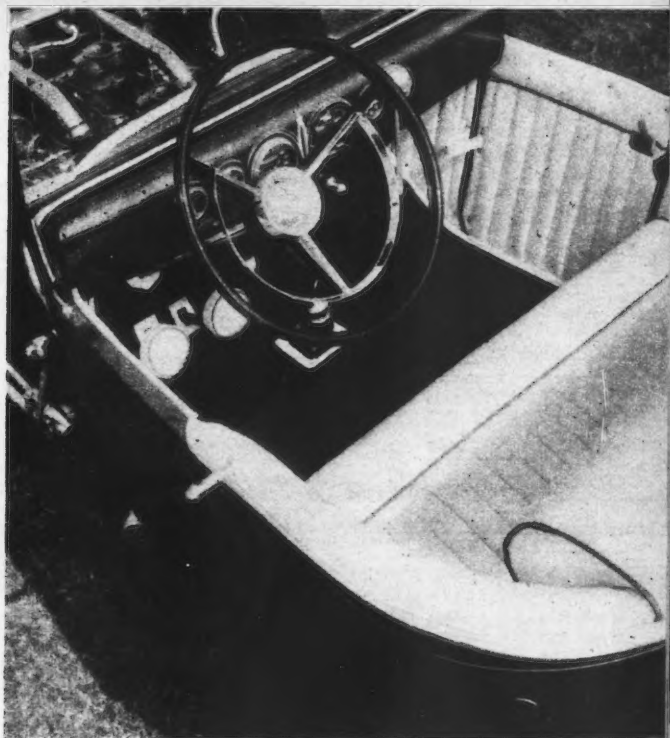
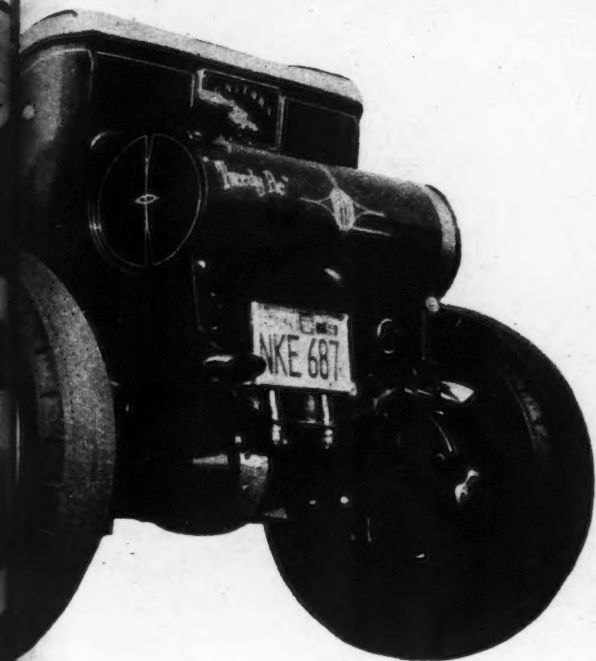
Photos by Ed Roth



A member of the Orange County (Calif.) Ignitors, Johnston has employed many novel ideas on his 1470 lb. jewel. Gas tank is secured to rear of cockpit portion of pickup body. Accessory taillights mounted beneath tank. Striping by Ed Roth.

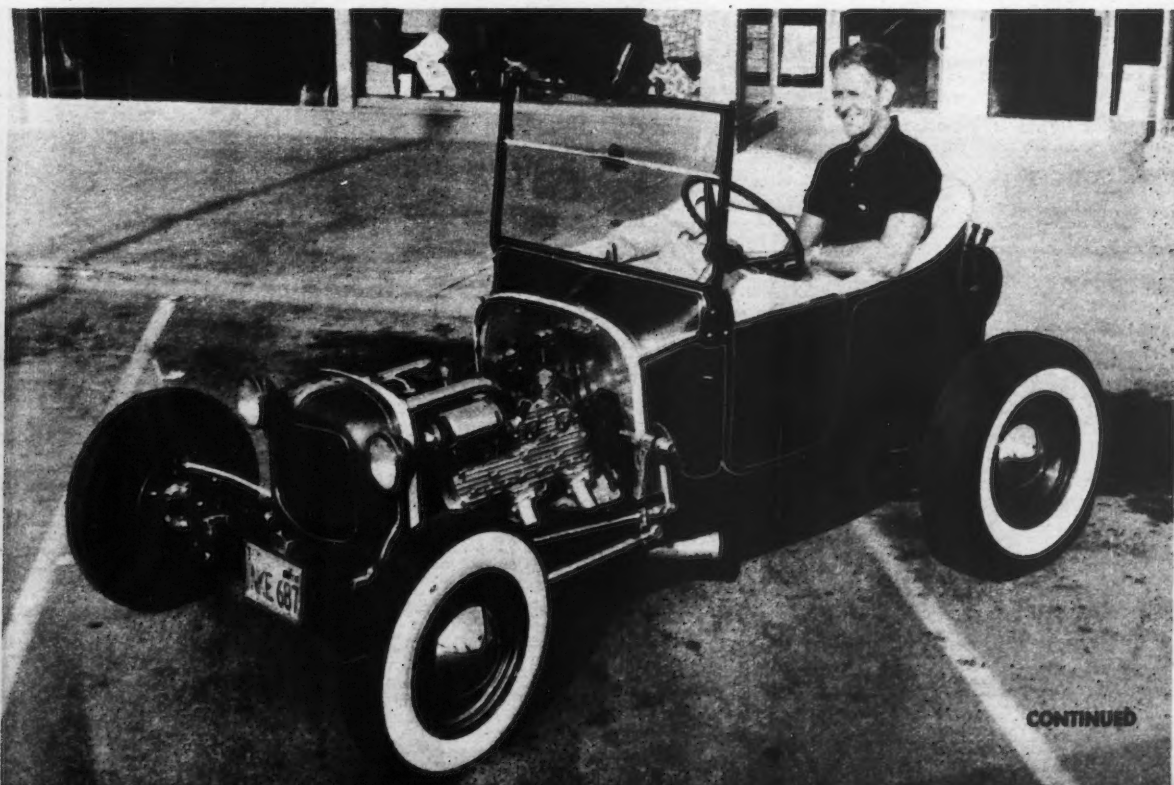
Another flathead, this is a '48 Mercury mill with 1/4 x 5/16 stroke and bore job, Navarro hi-compression heads, and dual carburetors. Grille shell is much-chopped '34 Ford truck component; small seal beams also used. Note alum. panel firewall.



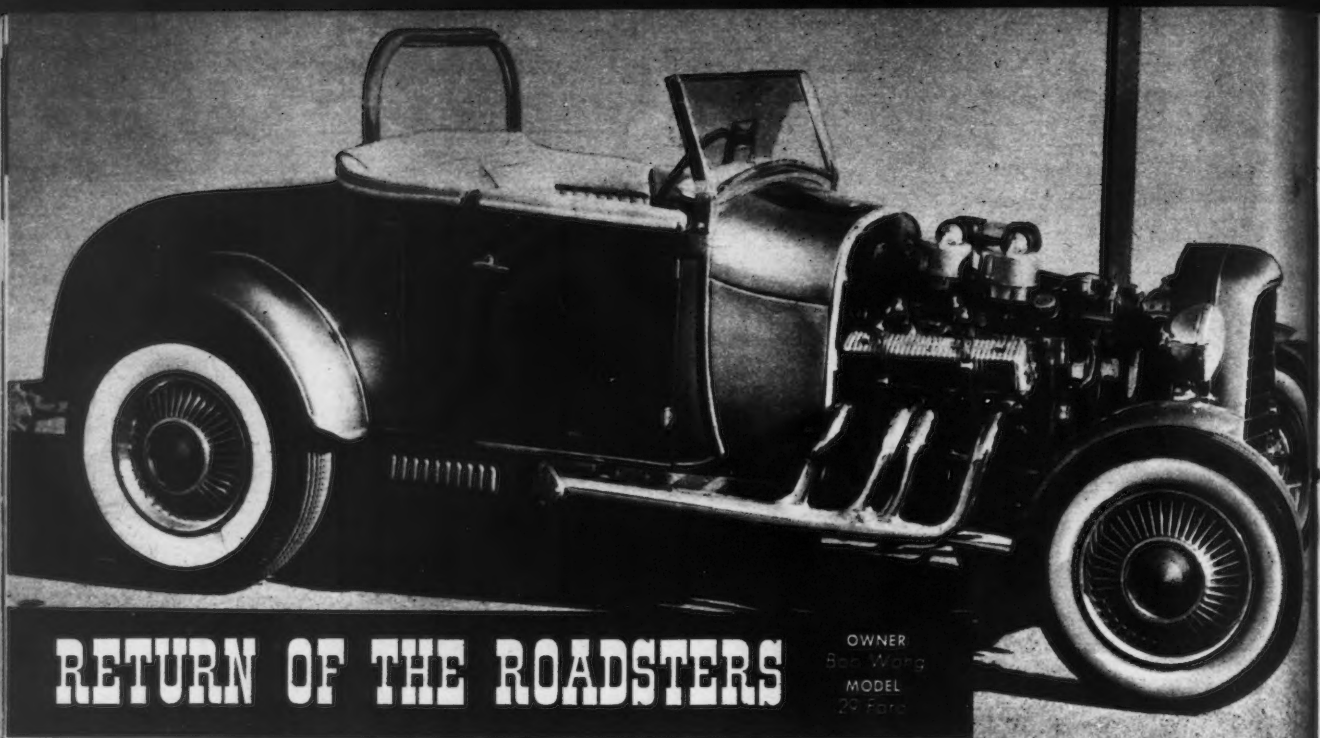


*Drastically altered body shell called for specially constructed interior. Seats are rebuilt and upholstered (as are door and side panels) in white Naugahyde with purple trim. Stylish stitchwork was jobbed out to Golden Needle Kustom Trim Shop in Garden Grove, Calif. Dash is specially made. Wheel was taken from low-flying '56 T-Bird; note chroming.*

*With owner and builder Johnston at the controls, you get a fair idea of the lilliputian size of the 'T'. Credit for paint goes to his nephew Dick Johnston. Suicide front end is used; gear for steering is Ross made. Rear wheels reversed for wider look.*



CONTINUED



## RETURN OF THE ROADSTERS

OWNER  
Bob Wong  
MODEL  
'29 Ford

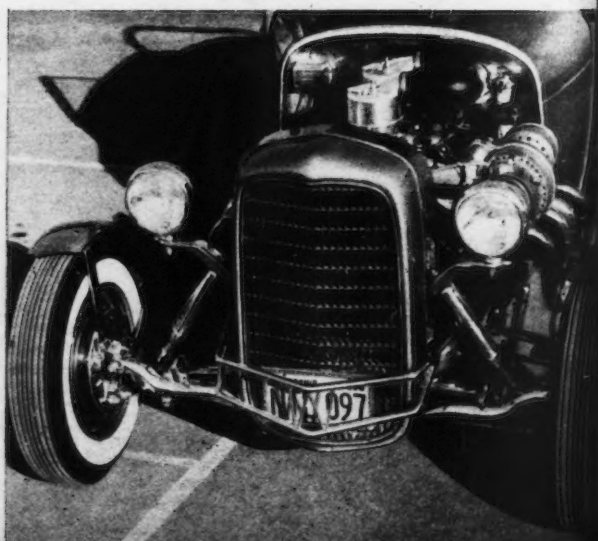
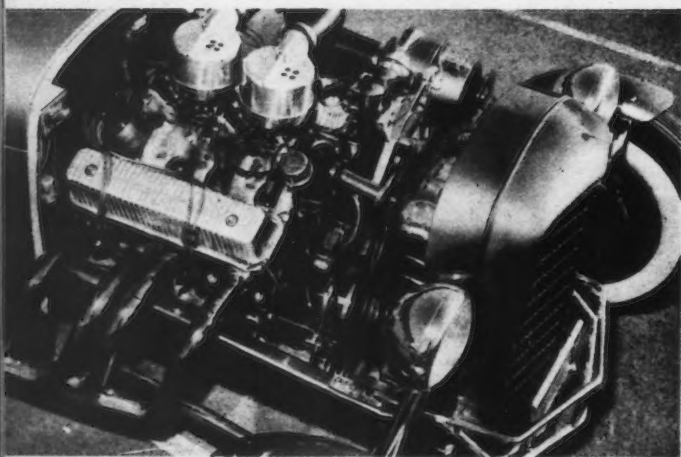
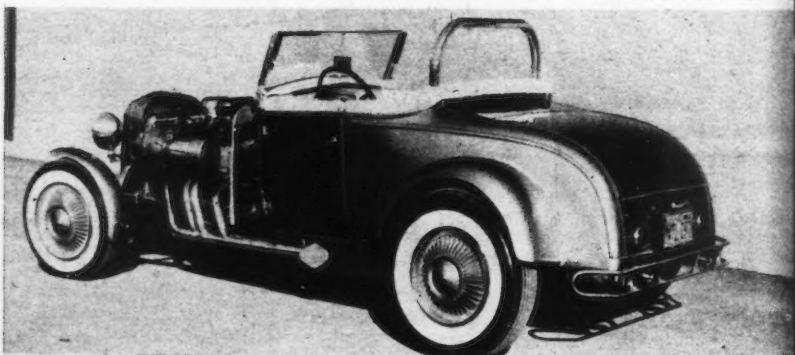
\$50 is the primary investment in the fabulous roadster built by Bob Wong of San Jose, Calif. An outstanding showrod, this metallic gold-blue lacquered '29 Ford body on channel steel frame is channeled 4" while special chassis is zeed 6".

Pontiac taillights are mounted on deck, protected by curved nerf bar bumper. Fury wheel discs, headers add appeal.

BELOW • In case you're wondering, that's a McCulloch supercharged Lincoln mill with Herbert cam, Edmunds manifold, polished ports, stock specs.

Egg crate grille is installed in deuce shell. Front end has Dodge and Ford pieces, '39 Chev steering, Merc shocks, '39 Plymouth spindles, Chrysler brakes.

Photos by Frank Faraone

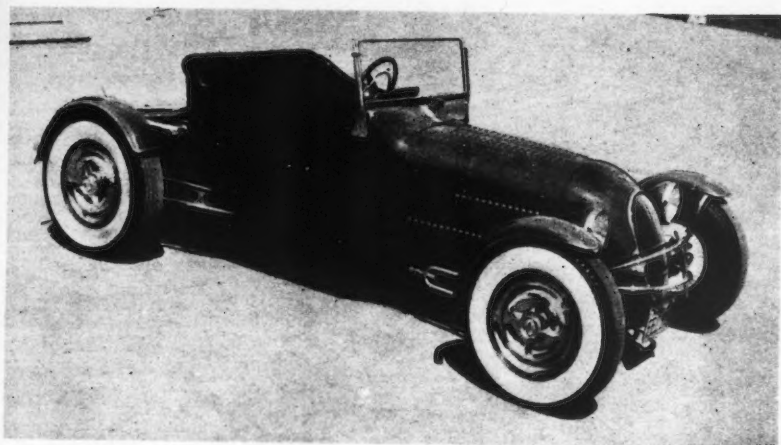




This '23 'T' rod is owned by Joe and Frank Ferreira, Rio Vista, California, and was built by Rico Squaglia. Shell is race car type; cycle fenders run.

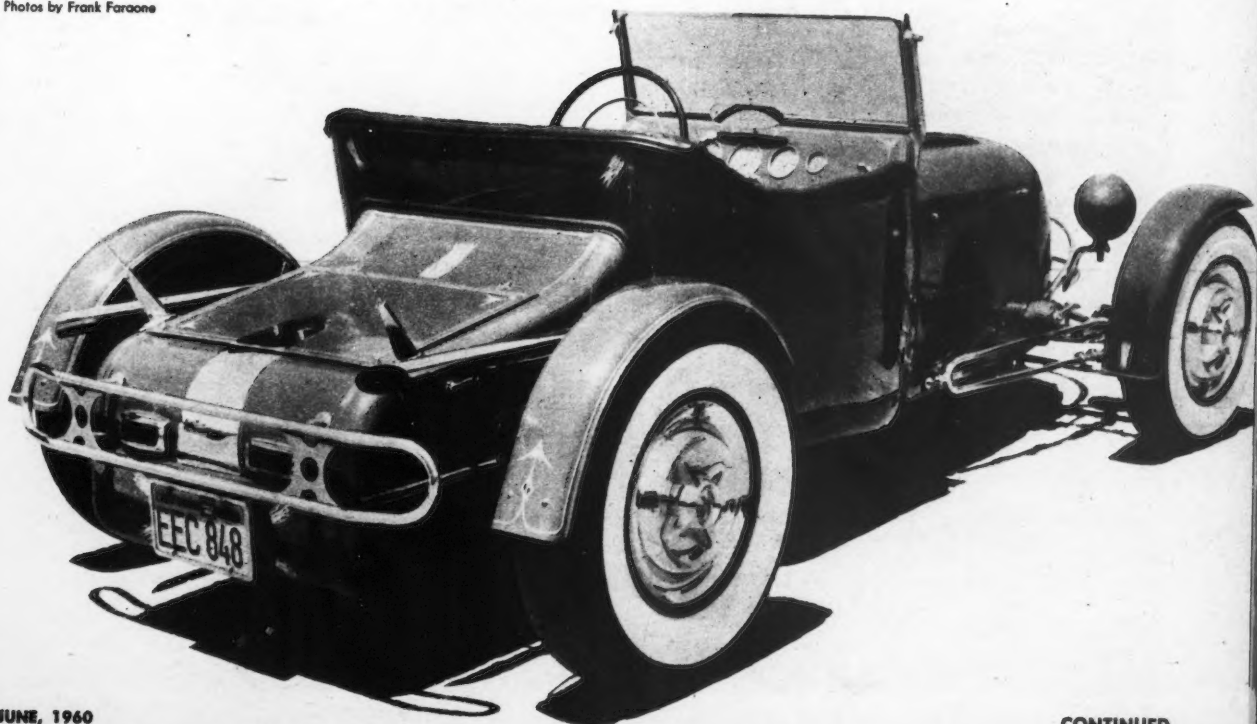
Hot V8-60 mill is installed on special frame with Model 'A' suspension, '34 Ford front axle, 'A' rear axle. '40 Ford shocks, spindles are installed.

'37 Chev unit steers Matador Red rod with black Naugahyde upholstery. Body is channeled 4"; binders are Kinmount disc brakes. Rear pan is rolled under.



Photos by Frank Faraone

OWNER  
Frank & Joe Ferreira  
MODEL  
'23 Ford



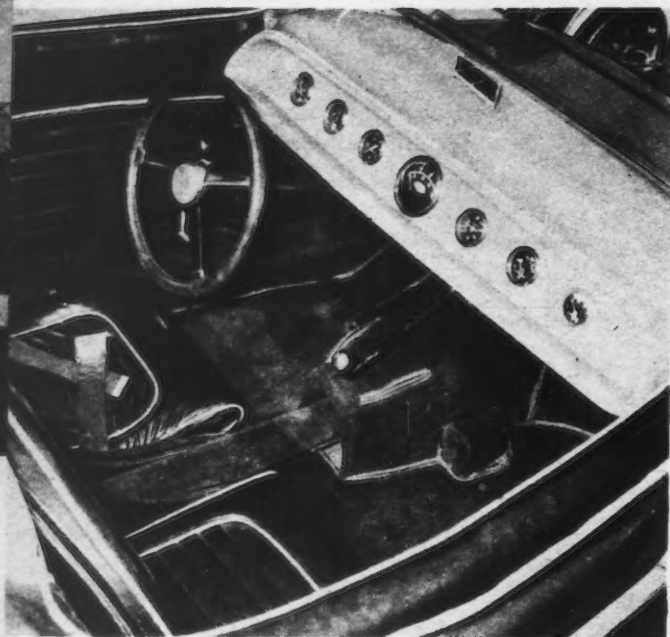
# RETURN OF THE ROADSTERS

OWNER

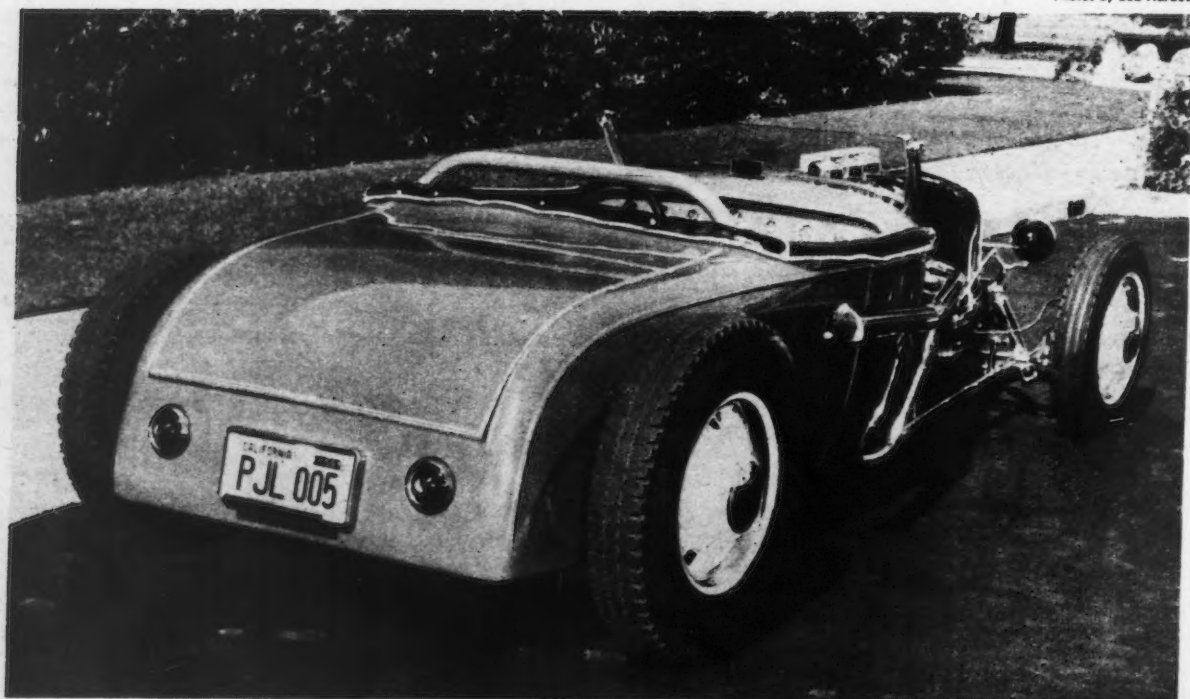
Pat Munn

MODEL

24 Ford



Photos by Bob Hardee

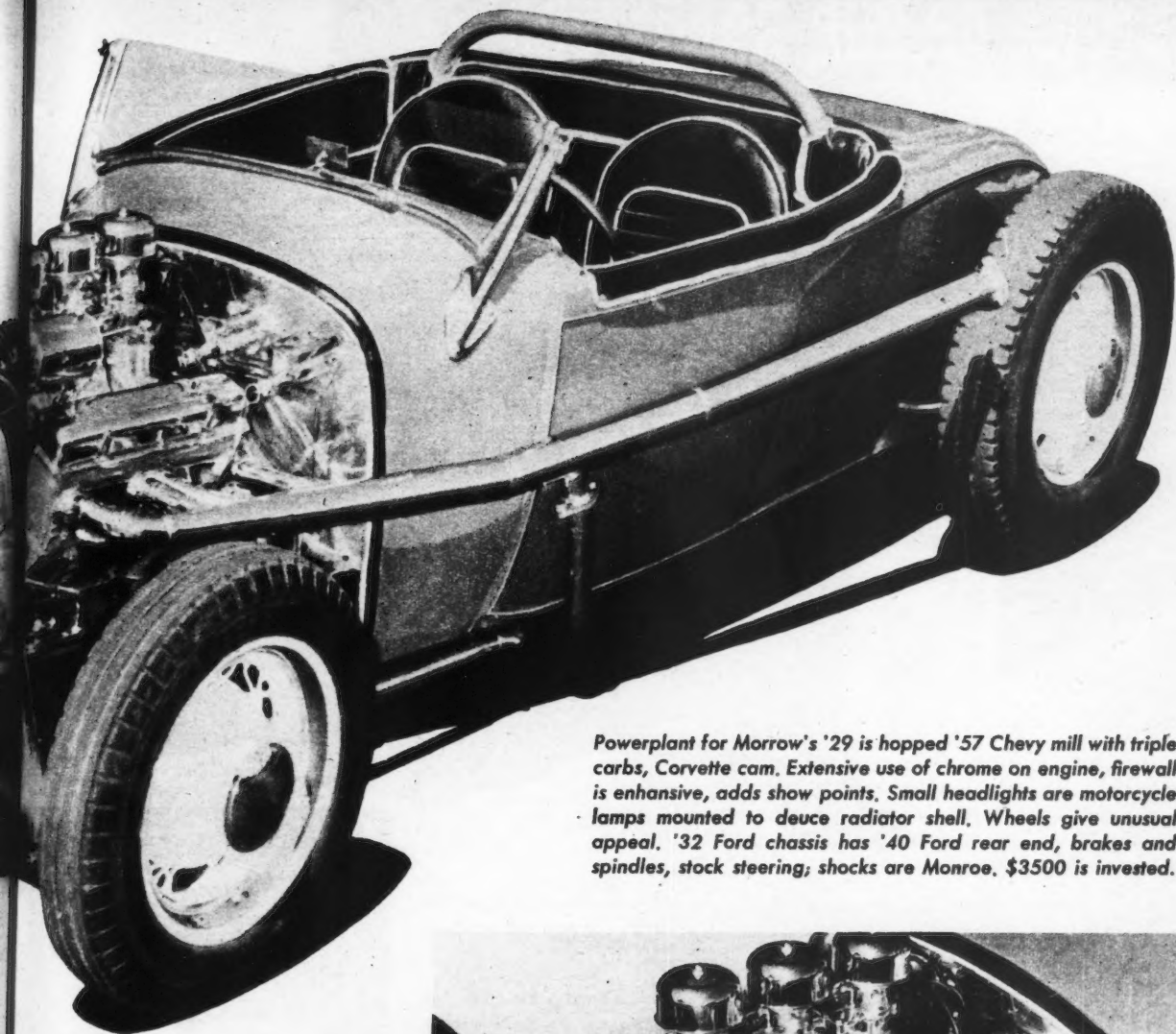


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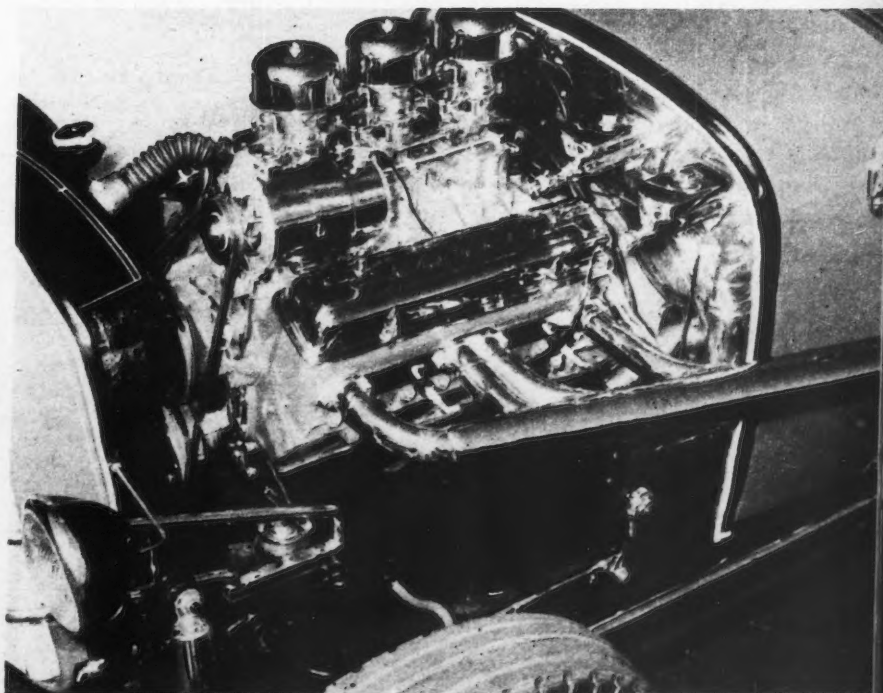


Powerplant for Morrow's '29 is hopped '57 Chevy mill with triple carbs, Corvette cam. Extensive use of chrome on engine, firewall is enhansive, adds show points. Small headlights are motorcycle lamps mounted to deuce radiator shell. Wheels give unusual appeal. '32 Ford chassis has '40 Ford rear end, brakes and spindles, stock steering; shocks are Monroe. \$3500 is invested.

Pete Morrow, an active member of the San Diego, California Prowlers is the owner of this '29 Ford roadster painted in brilliant Huntsman Red lacquer finish.

Black pleated, rolled Naugahyde with white trim graces interior bucket seats. Dashboard was constructed from center grille bar of '57 Chevrolet pickup truck.

Lowering of sleek rod includes: zeed frame of 10", dearched springs-2", dropped axle, and 8" channeling. Pontiac taillights and wire wheels added.





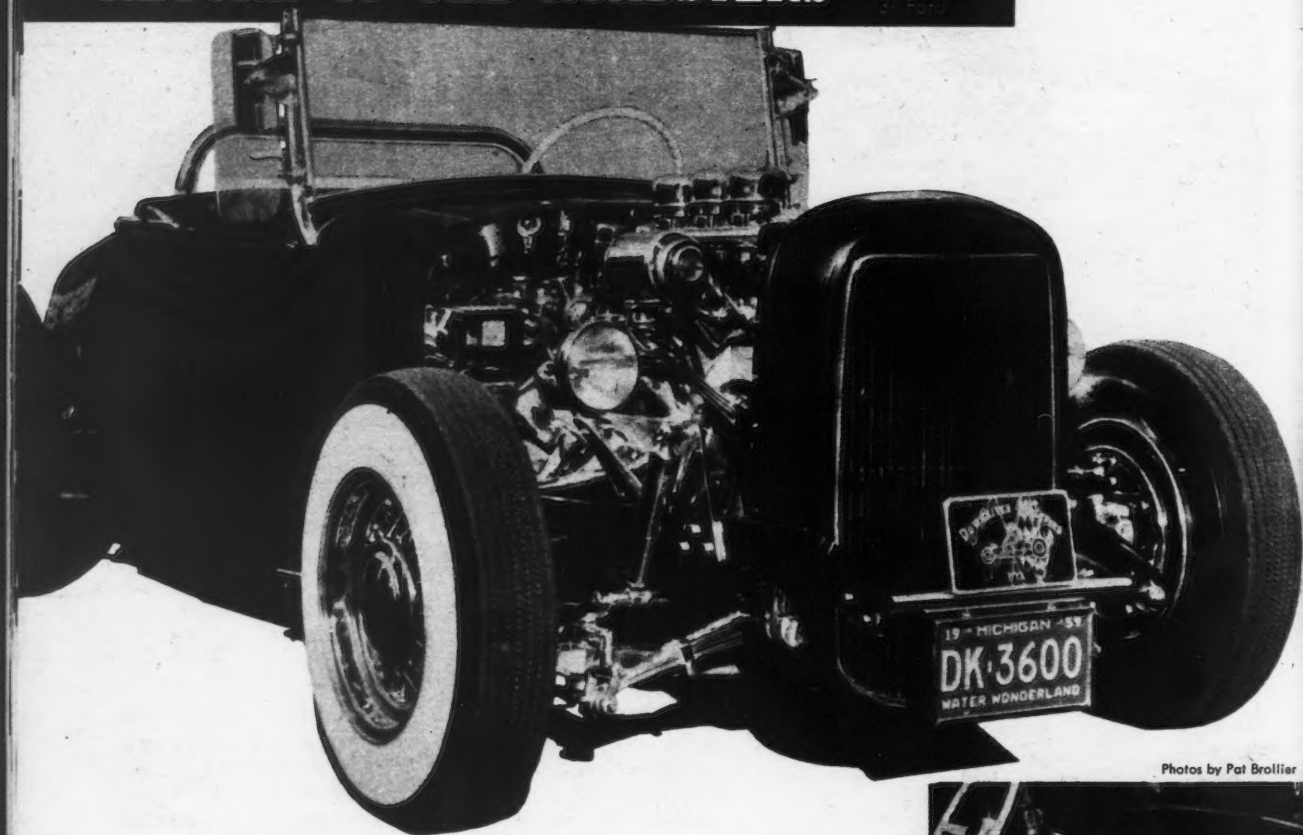
# RETURN OF THE ROADSTERS

OWNER

Jim Yorke

MODEL

'31 Ford

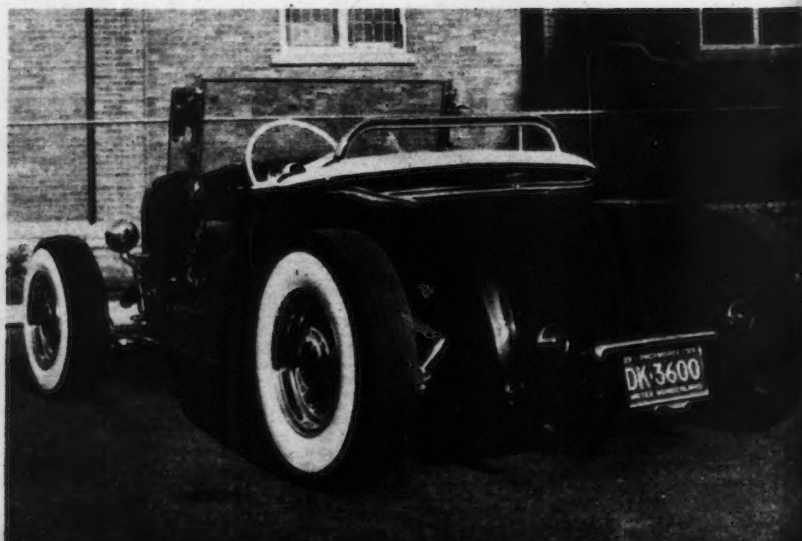
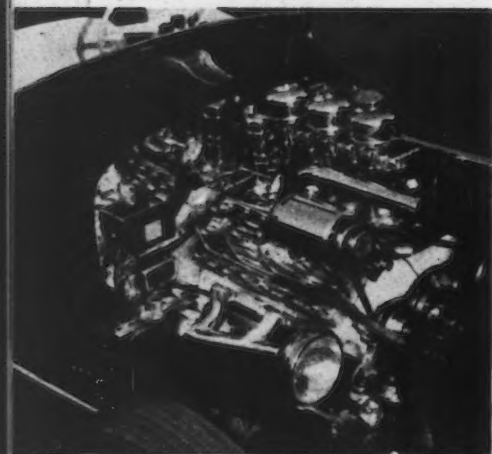
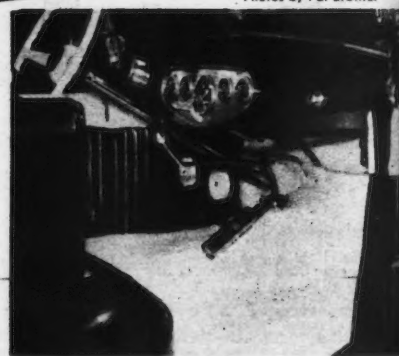


Photos by Pat Brollier

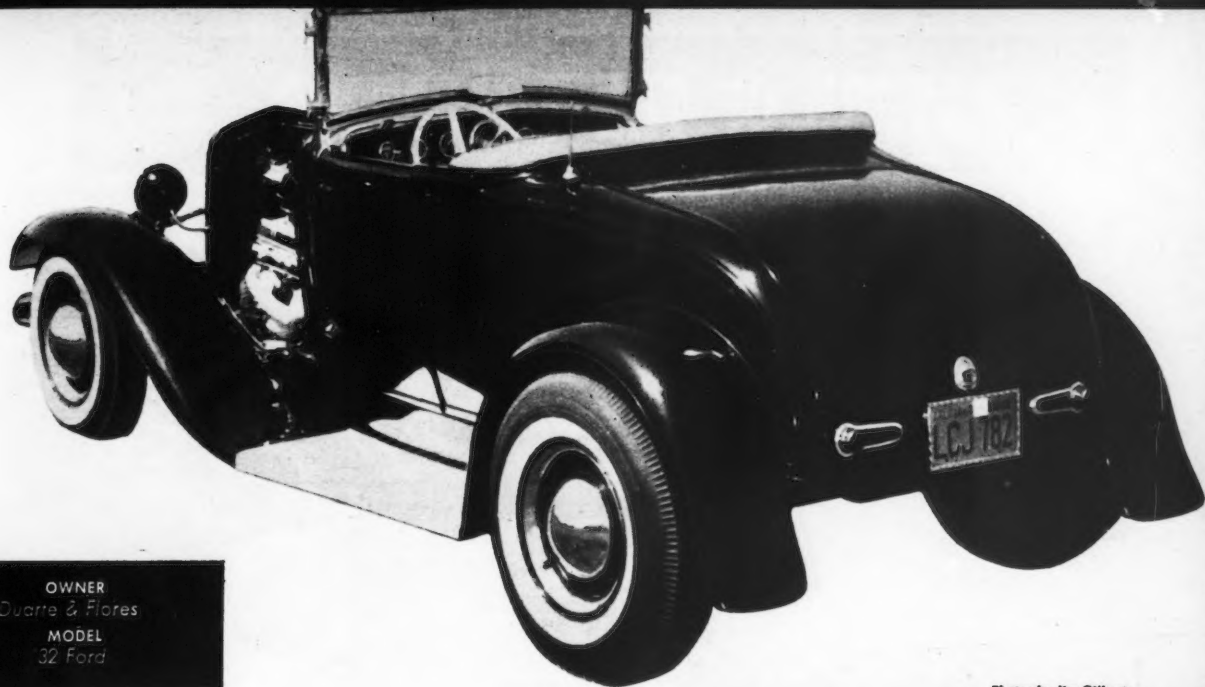
Built by Edward Zilka of Wyandotte, Michigan, the 'Burgundy Red Roadster' (its show title) now the property of Jim Yorke, Port Huron, N. Y. Car wins top trophies.

'31 Ford body on '32 chassis, rod is channeled 6", has '34 Ford truck grille, '40 Ford front suspension with deuce axle, '48 Ford gears, brakes, '57 Buick wheels.

Two areas of beauty; interior stitched in maroon/white Naugahyde by Andy's Trim, in Ecorse, Mich.; engine, 276 cube '41 Merc with  $\frac{1}{8}$  x  $\frac{1}{4}$  bore, stroke, Isky cam.







OWNER  
Duarte & Flores  
MODEL  
'32 Ford

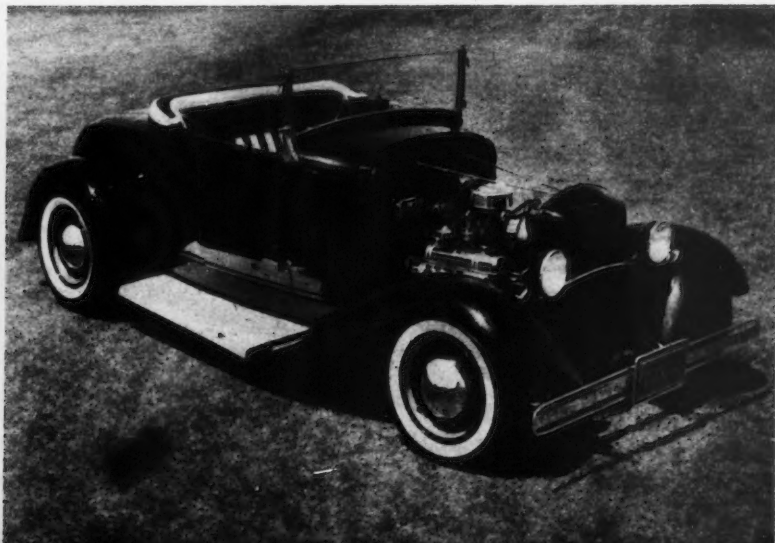
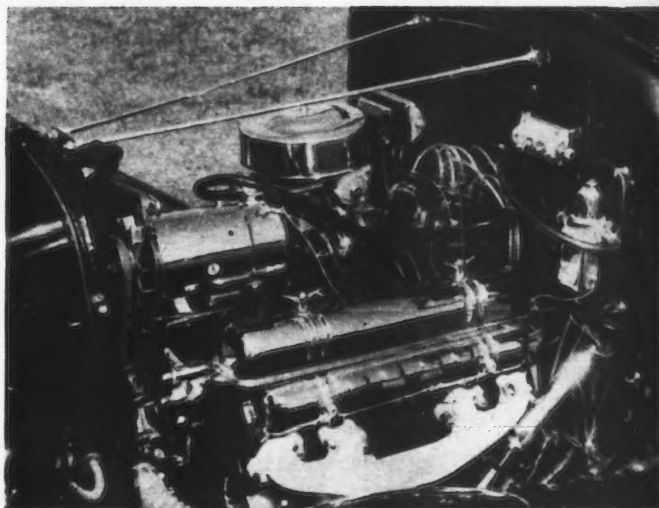
Photos by Jim Gilbert

Co-owners of this black lacquered '31 Ford are Sal Flores and John Duarte of California; both are in 'Deuces' club.

Windshield is chopped 2"; front fenders are '32, rear are '31. Cragar dropped axle, stock running gear are run.

'53 Buick mill is stock, runs through '47 Ford transmission, 4:11 rear end. Ford wheels up front, Chrysler's on rear.

Zebra striped black and white Naugahyde was pleated and rolled by Medrano Tops in Santa Ana, California.



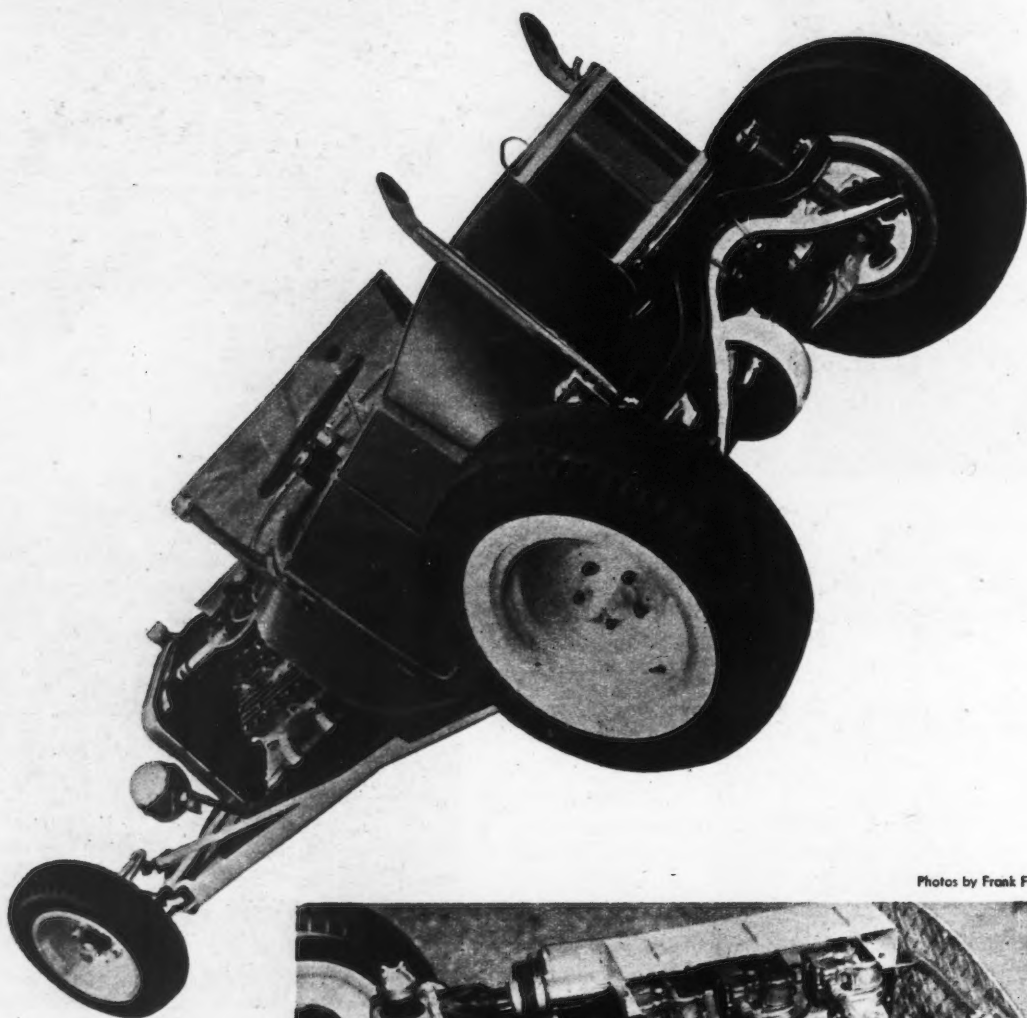
CONTINUED

# RETURN OF THE ROADSTERS

OWNER

MODEL

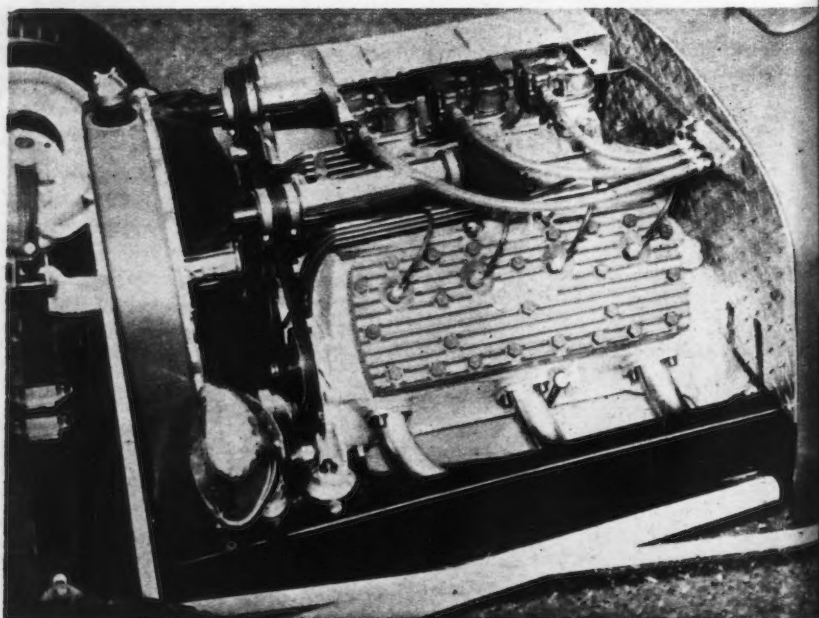
26 Ford



Photos by Frank Faraone

To wind up our pictorial spread on the fabulous roadsters is Larry Selmer's wayout showrod. This San Francisco car was built around the engine and driveshaft, these being of prime importance to the roadster's short length.

Traditional favorite, this '47 Merc flat-head has 274 cubic inches with  $\frac{1}{16}$  x  $\frac{1}{4}$ " bore and stroke, Weber cam, Edelbrock 9:1 heads and manifold with three Stromberg 48 carburetors, and mildly enlarged/polished valves help.

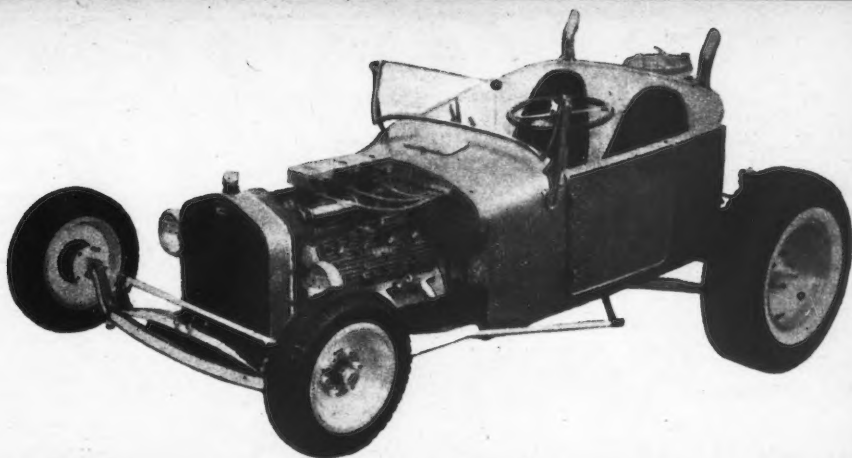


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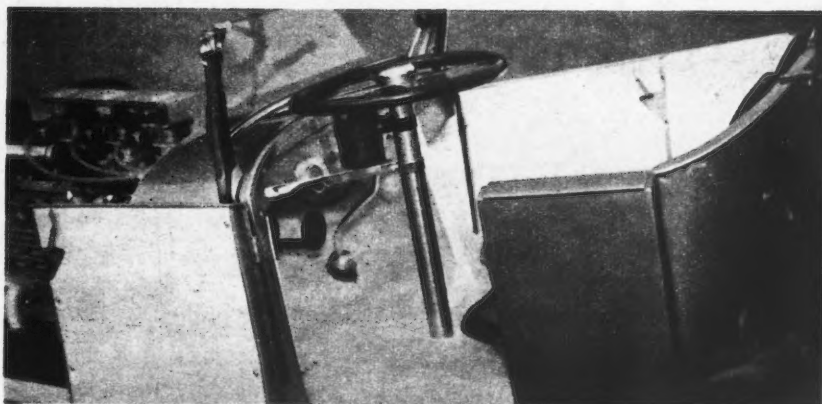
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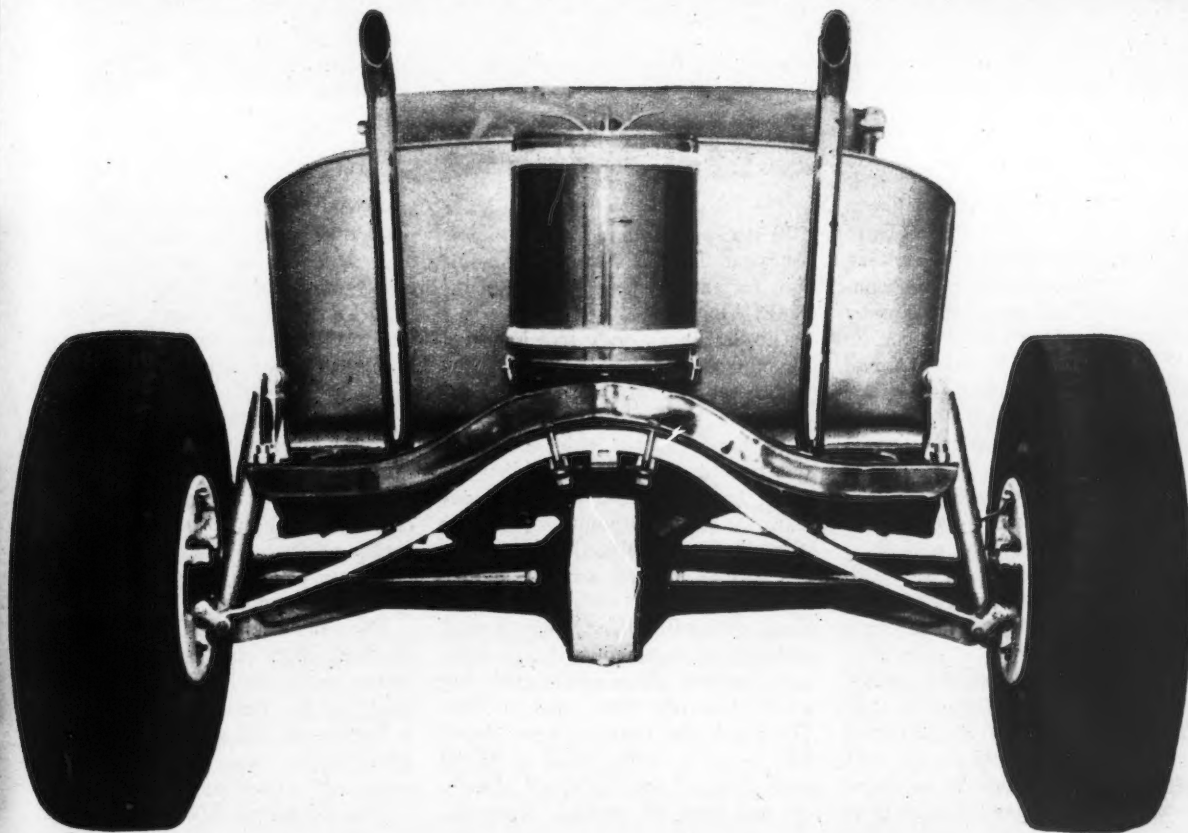
Engine and driveshaft angle were of primary interest on Selmer's rod. Frame and body ('26 'T' sedan shortened) were installed later. Mag wheels of varying sizes. '32 Ford suspension, suicide front gives popular dago look.



Because of radical angle for mill and shaft, standard installation of this modified and shortened 'A' steering column would have interfered with the pedals, and couldn't clear engine. Reports have it that steering is not impaired.



Rear suspension is '40 Ford with Model 'A' spring; rear shocks only are tube. Tread is 60", wheelbase 90". Spindles and brakes are '40 Ford. Body is channeled 7", painted metallic blue. White Naugahyde interior stitched by owner.





# SHOWROOM HUSTLER



By Bud Lang

**A**FTER REVIEWING THE newspaper accounts of the 1959 Daytona, Florida Speedweek races, *CAR CRAFT*'s staff couldn't help but wonder about the "stockness" of the many entries in the late model races on NASCAR's new 2.5 mile tri-oval asphalt course. Last year these "stockers" were averaging over 140 mph around the track and speeds were predicted to go even higher this year. Thus we were prompted to give our readers a first hand report on just what goes into making a stock showroom car perform with such incredible speed and reliability during the 500 mile race each year at Daytona.

Learning that Vel Meletich, prominent Ford dealer in Torrance, California, was preparing a 1960 Ford Starliner for the present season, with the debut to be made at Daytona, we contacted Vel about doing a story

on the car's construction since Vel's 1959 stocker was national champion last year in the National Association for Stock Car Auto Racing (NASCAR).

The Starliner's body had been removed from the frame and was stripped of all upholstery, seats and instruments, otherwise it remained stock. Lynn Gaither, chief mechanic and builder at Vel's re-welded the entire frame, adding reinforcement plates at strategic points for greater strength. Lynn replaced the spindles, coil springs, pitman arm, drag links and tie rod ends with heavy duty Ford optional units. Huge 3 inch wide brakes, heavy duty drums, hubs and backing plates along with big wheel bearings were also utilized. These are also optional Ford items. The heavy spindles retail at \$45.00 each. Gabriel tubular shock absorbers are used all around. A special

anti-sway bar was made up so there would be sufficient clearance between the bar and the oil pan for easy removal of the latter.

A Ford station wagon rear-end was installed along with special axles that feature stronger flanges, bearings and locks. The wagon's center section will take any one of a dozen Ford or Merc gear ratios. Vel's car ran a 3.10:1 ratio at Daytona, the engine turning around 5800 rpm consistently. So far everything remains somewhat stock, all of these heavy duty parts being available as optional equipment.

The wheels used on Vel's Ford are 15 inch discs that have a second center section welded to the outside, doubling the hub strength where it is extremely important. Goodyear Blue Streak racing tires, 7.60 x 15's, were used exclusively.

The 352 cu. in. high performance

## 150 mph Late Model Stocker — with a few reservations



Vel Meletich, Torrance, California Ford dealer and car owner, steers Starliner into pits, assisted by Wesley Roarh, crew member and one of car's builders, and another helper. Low slung '60 Ford averaged 150 mph over Daytona Tri-Oval.

engine had been sent out to Performance Associates in Covina, where Les Ritchey and crew disassembled it completely, bored the block out .005 inch for extra wall clearance. This step along with installing a cam of the owner's choice, except for roller grinds, is all that is allowed by the NASCAR rules according to Ritchey. The pistons, pins, cam and lifters were all Dry-Lubed. This process consists of the parts being etched in a special acid bath to create minute hills and valleys in the surface metal followed by a coating of molybdenum disulphide which is baked onto the metal under extreme heat. Jet engine parts receive the same treatment to prevent galling of the metals when they are subjected to high temperatures and friction. The resulting rough texture quickly smooths out after a short run-in period, the parts not being enlarged by the Dry-Lubing. All reciprocating parts were sent out for a complete balancing job before the engine was reassembled and put on the Clayton engine dyno for many exhaustive hours of testing. Ford produces a lovely set of cast iron exhaust headers for the 352" engines so the breathing end is cared for. A large oil pan is another Ford specialty item, holding 7 quarts. The ports may not be touched, no milling is allowed nor other changes. A Schooler cam was installed while the crank had its journals micro-finished. Bearings are also heavy duty, featur-

ing a .010 inch babbitt surface which reduces bearing failure due to its hard backing. Stock babbitt bearings are softer, scour too easily. A stock 65 pound oil pump keeps the juice flowing.

At the electrical end of the engine, Auto-Lite plugs, battery, coil and complete wiring were installed giving exceptionally good service later at Daytona. Many other Daytona stockers ran the same electrical components. Dayton points replaced the stockers, which wouldn't hold up, in the distributor.

By now it is evident that building a stock car is no simple matter. After seeing the many modifications performed by such competent people, we cease to wonder that the cars perform so well. After ten days of preparation the body and engine were replaced on the frame. The team of Vel, Lynn, Les, Wesley Roarh, crewman and assistant car builder, and driver Parnelli Jones,

**CONTINUED**

*Right Center.* With Ford engine on Clayton engine dynamometer, Performance Associates team of Wally Cartwright & Les Ritchey check mill with stethoscope.

*In the pits at Daytona, Wesley Roarh, crewman, looks on as Les Ritchey adjusts tappets. Ritchey built up the 360 hp engine, joined the team in Daytona.*

Photos by D'Ollivo, Long

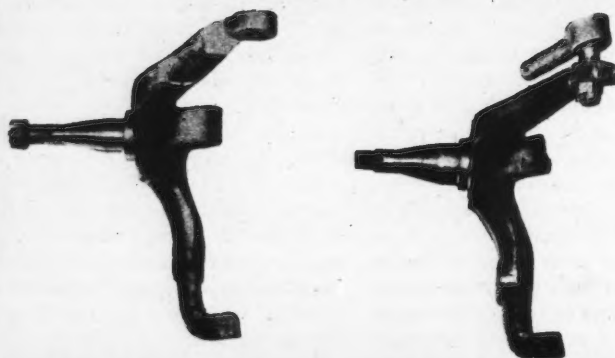


## SHOWROOM HUSTLER

Right. Following disassembly of stock 352 cu. in. engine, reciprocating parts were all statically and dynamically balanced by Sidney Hoover of Auto Dynamic Balancing in W. Covina. Pistons, pins, lifters and cam were dry-lubed, a process designed to cut down friction and thereby reducing wear to parts.



Above. Stock anti-sway bar is removed and replaced with custom-made heavy duty bar. New mounts were necessary as this bar rides farther forward than stock bar, allows pan to be dropped.



Right Center. Heavy duty Ford spindles were chosen for strength and larger bearings. The heavy duty pitman arm will give steering ratio of 17:1, while stock arm steering ratio is about 20:1.

Right. Nearing completion is frame of 1960 Fairlane, which has been re-welded, reinforced at strategic points for additional strength. Ford station wagon rear-end is strengthened with steel rods at bottom. 11" stroke heavy duty Gabriel shocks used at Ford's rear.





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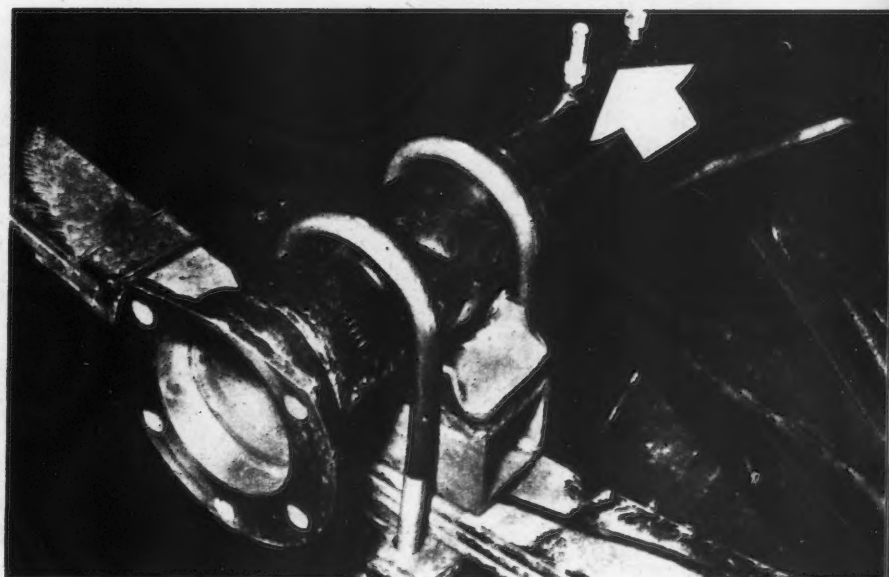
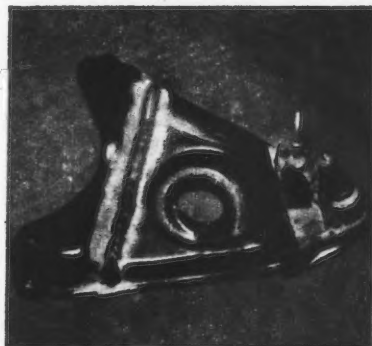
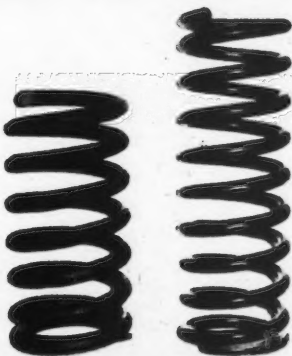
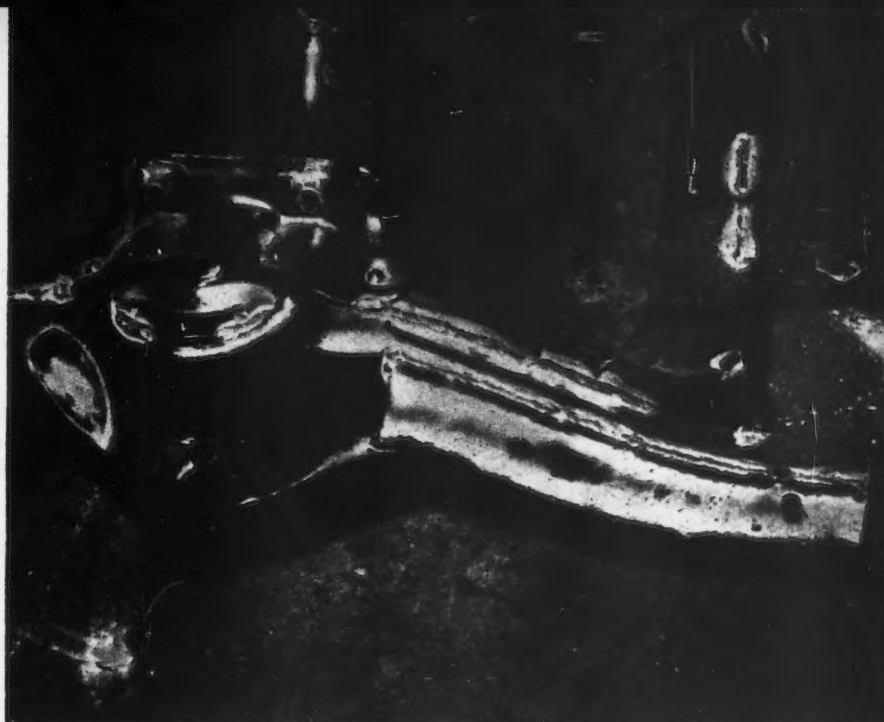
left for Florida. The car qualified well, Parnelli Jones really cranking on. Entered in the 500, Parnelli was clocked at 150 mph on the main straight, passing many cars as he wound his way around the fast course. After but 49 laps, 122.5 miles, the Vel's Ford was retired due to failure of the rocker shafts at the front of each head. A quick summary reveals that these stockers are *stock*, allowed only a racing cam and competition refinements. Top speed at Daytona this year was 154 mph—how's that for the family sedan!

New welds and steel plate reinforcing of frame is visible. Lynn Gaither, Vel's chief mechanic, is responsible for the majority of chassis building, he was assisted by crewman Wes Roarh. Team built car from scratch in one week. Ford heavy duty parts were put to use.

Far right. Right A-Frame was cut at large end, opened up  $\frac{3}{16}$ ths inch on rear side then reinforced and welded. This step enabled 5 degrees additional positive caster to be set into right wheel affording better handling in the turns, cutting down tire wear and tear.

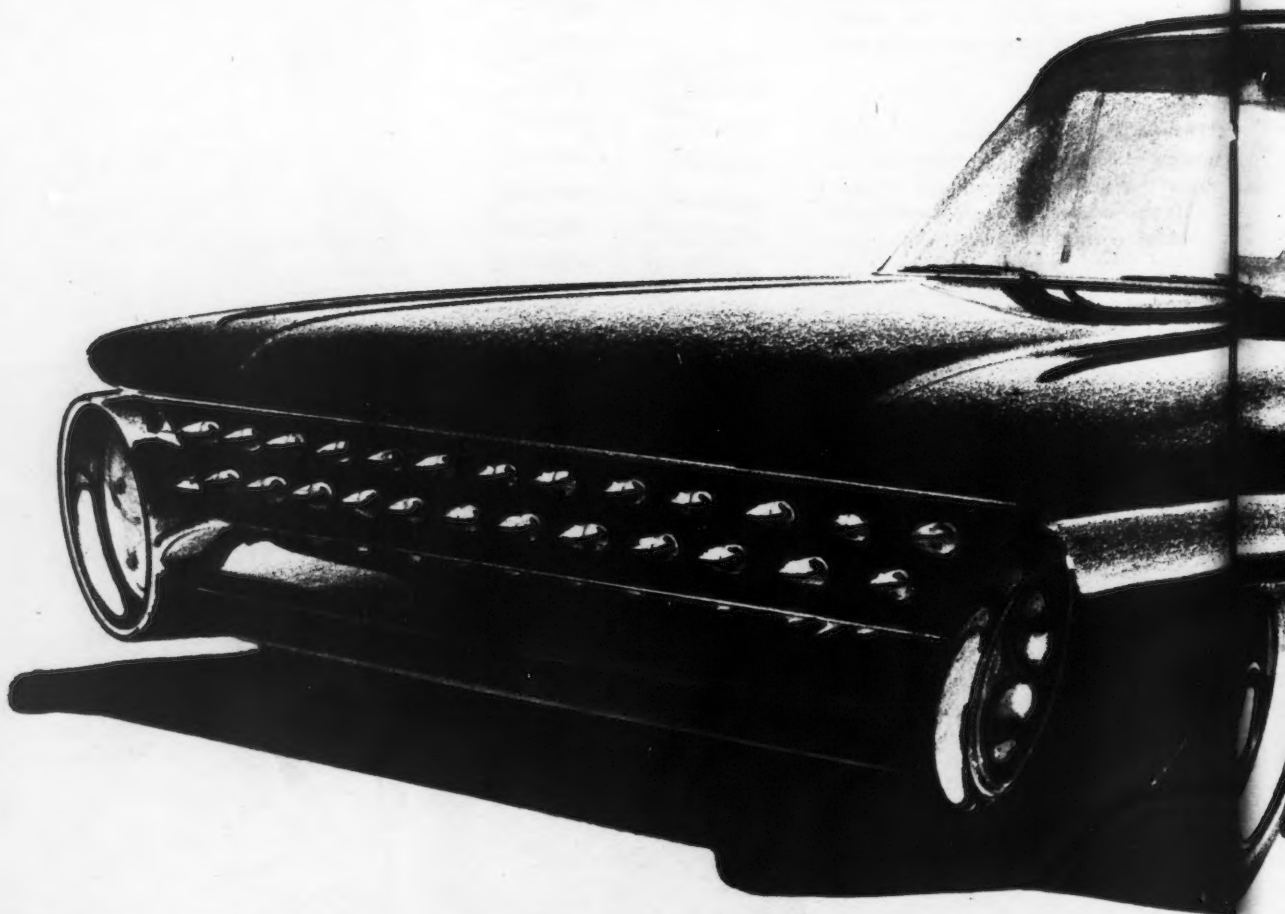
Right. Contrast in length and coil diameter of stock spring at right and the 900# heavy duty unit is quite visible. Vel's Ford runs the 900# front springs, though Ford also has available 700# coils. A Gabriel 9" tube shock is used on front right, standard 6" on the left.

Ford station wagon rear-end replaces stock unit, is noted for its rugged construction, larger wheel bearings. 2" lowering blocks are welded to spring mount. Fuel type fitting on axle housing takes hose that leads into car. It vents out heat, cooling rear-end. Leaf springs have nine leaves, are custom made with 6 inch arch, cost \$40 each.



# STAR KUSTOM SHOP RESTYLES THE '60 MERCURY

THERE'S A POPULAR old adage that tells us the third time is the charm. We believe this to be true in many cases, for this month's featured restyler is Darryl Starbird, proprietor of the Star Kustom Shop in Kansas, and it's his third time around for this section. Darryl has risen rapidly in the custom world, recently climaxing his torchwork with Bob Turgeon's National Champion Sweepstakes Award winning T-Bird (featured in January '60 CC) and one of the wildest 'dream cars' you've ever seen, Detroit notwithstanding, 'The Predicta' another 'Bird but in foundation only. Starbird's 'Predicta' walked away with the Oakland Roadster Show's Car of the Future trophy and will soon be seen on the cover of this magazine. With the top Detroit Show trophy and Oakland's award tucked under his belt, Starbird turned his talented torch on the '60 Mercury. This is an account of his customizing.





*Darryl Starbird*

#### **BODY MODIFICATIONS**

Cluttering chrome trim, medallions and script names are removed from the Merc. Side chrome pieces which run the full length of the car when stock, are shortened to extend only 12" beyond the door. Trim is also reworked in the door area to allow for clean removal of handles.

#### **FRONTAL CHANGES**

Deviating probably the furthest from the stock Mercury appearance is the front end. Completely discarded are the bumper and the grille assembly; this leaves a long, narrow



**ILLUSTRATIONS BY LARRY EVANS**

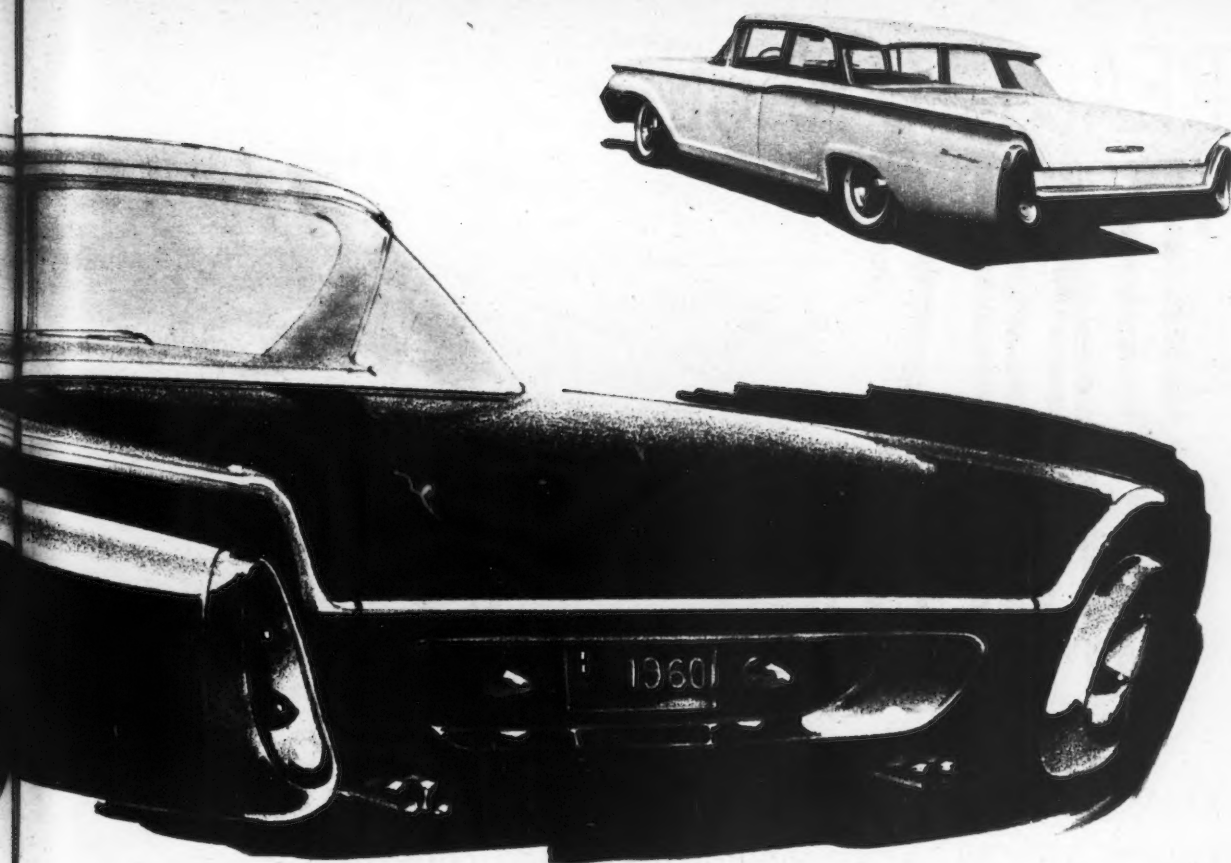




# RESTYLING THE '60 MERCURY



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opening beneath the contour rolled hood. This space will be neatly filled, but first let's construct the headlight housing. Moved from their horizontally spaced position within the grille components, the new Starbird quads will be canted and set behind a deeply tunneled housing. The housing is made of sheet metal, formed to conform with the fender lines up front; notice that the flaring blends in smoothly with the stock Merc wheel well crease on the fender. A late innovation, just now at this writing getting started in custom circles, is the clear plastic covering which is installed over the headlights. If you plan this sort of arrangement, we suggest you check your State Law. It might be prohibited in some sections of the country.

To connect the two widely separated headlight units, Starbird added a sheet metal pan. Further custom emphasis is provided by rolling the pan. Between the lower rolled pan and the stock rolled hood with un-

sightly ornaments removed, is a grille assembly fabricated of '59 Cadillac taillight lenses that have been dipped in a chrome bath. Two rows are used with a staggered mounting. All metalwork on the front end is molded to the body.

#### REAR ASPECT

In checking the stock Merc with Darryl's restyle job, it appears that the rear fenders are basically similar. And that they are, save for an eight inch extension; stock chrome bumper tips that are trimmed and re-fitted. The main bar of the bumper is discarded and a sheet metal pan is molded to the body. The trunk is brought-out, visually speaking, by the chrome piece that runs over the lip. This remains, but directly below it an oval shaped shroud is added to the pan. This is for the license plate which sits back nearly six inches; license lights are chromed Cad units with small side slots that release enough light to illuminate the plate.

A chromed panel forms the edge inside the shroud. Taillights (you guessed it) are '59 Cadillac, two of them installed in the fender tips.

Popular scavenger-type pipes are used. Starbird added four of them with tips slightly indented in the rolled pan.

Using latest custom ideas and combining them with stock Mercury lines, Starbird has refined the '60 model to such a point that we're sure you'll agree with us: The third time is the charm.

# READY-TO-RACE 'RAILS'



*Construction problems are eliminated as drag racers turn to championship designed chassis*

*By Don Francisco*

TEN YEARS AGO A fellow could have stood in the middle of a group of hot rodders and yelled "Anyone for drag racing?" and been in hardly any danger. He might have had to dodge a few stockers and near-stockers that would be maneuvering to be first in line but the activity wouldn't have been overwhelming. Now, in 1960, a fellow who had the guts to ask the same question, even in a normal tone of voice, would be inviting suicide. He would more than likely be crushed to death by the swarm of dragsters that would converge on him from all directions. This change in conditions is an indication of two things: Legal drag racing has grown so terrifically that now it is a sport of enormous proportions, and it has become possible for anyone to own a dragster.

Dragsters are the ultimate in drag racing machines. They were created by drag racers, for drag racing. They have no other reason for existence. Because they are highly specialized

cars, it wasn't until recently that a fellow who wanted to step up to a dragster had to build his own. This was a job few hot rodders were capable of tackling with any degree of success. Even though a potential dragster owner might have had the know-how to design a car, he was usually stumped by actual construction problems. But now, anyone who has a reasonable amount of money to spend can become the owner of a brand new dragster, or any part thereof, without any more effort than it takes to count the money and hand it to another party. This "other party" can be any one of at least four persons, or companies, who are now building dragster frames and parts on a full-time basis for others than themselves. To be more specific, these four are represented by Scotty Fenn, Jim Nelson and Dode Martin, Lefty Mundersbach, and Kent Fuller, all of whom are in Southern California. Any one of these fellows can supply anything in the dragster line,

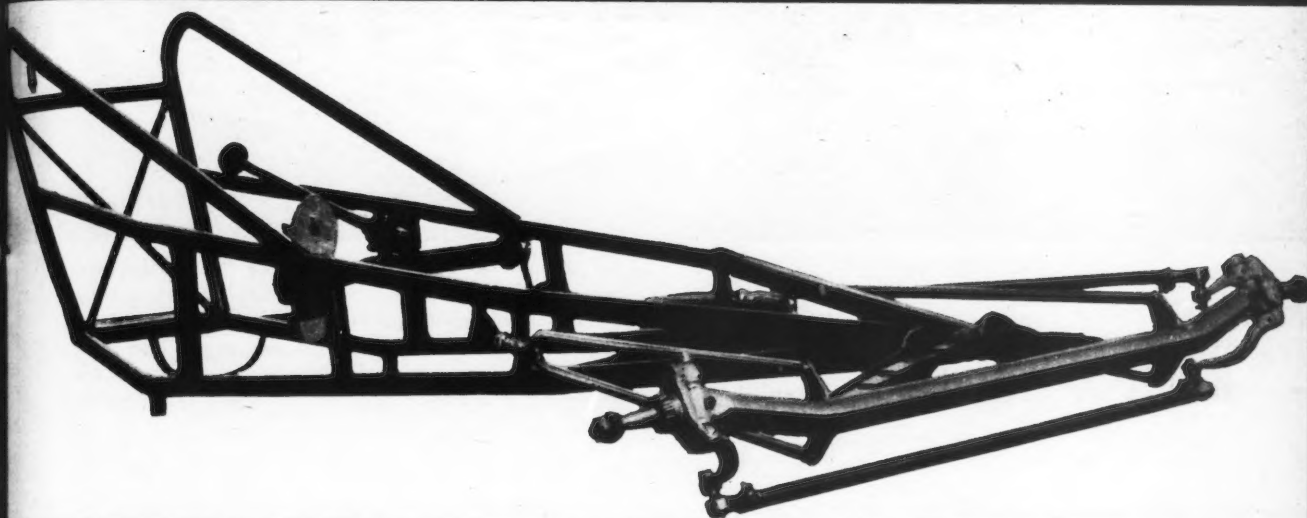
from frames to complete cars.

One of these men got into the dragster business due to a demand that he felt existed. He had no idea that the demand would become as great as it has and that his company would expand to its present size. This man is Scotty Fenn. Kent Fuller broke into the business a little more gradually. He built dragster parts on a part-time basis while holding a full-time job before he decided to open his own shop.

The other fellows now engaged in this unique occupation were gently pushed into it as a result of the reputations they had gained as successful drag racers with cars they had built for their own use. After building a few frames and chassis for would-be drag racers and fellows who already had cars with which they weren't happy, these men decided to take the maximum advantage of their know-how and reputations by going into the business on a full-time basis. They are Jim Nelson and Dode Mar-



At left and below are two excellent examples of the custom chassis work done by Kent Fuller. Drag racing roadster chassis at left was built for Tony Nancy; dragster frame below is Kent's "production" model. Availability of equipment of this caliber makes it ridiculous for average rodder to take time & effort to build frame.



tin, who work together, and Lefty Mudersbach.

As it is with most other types of businesses, each of the men who build dragsters has his own ideas about how the job should be done. Naturally, the ideas differ, but fortunately, all of the men are well aware of the responsibility they hold for the safety of those who will drive the cars they build. This is a grave responsibility because so little is required to get even the best-constructed dragster into trouble. And when a dragster running at speed gets into trouble, it usually takes to the air in one way or another and manages to get upside down. A driver who survives such an incident is, first of all, extremely lucky, and, secondly, was protected by a well-designed chassis that incorporated an efficient, sturdy driver's compartment and roll bar assembly.

It would be easy in an article of this type to try to differentiate between the various frame designs used by these dragster builders and to expound theories and opinions; however, such is not the purpose of this piece. Our purpose is merely to describe and show the products each of the builders manufacture. Actu-

ally, the cars and parts these men make speak for themselves every weekend with their performances on the nation's drag strips.

#### CHASSIS RESEARCH

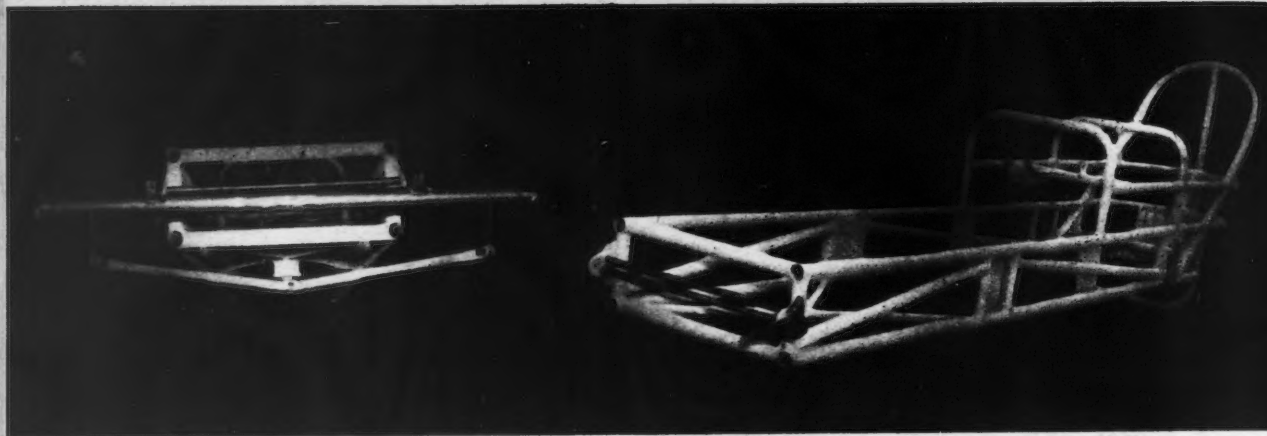
From a modest beginning, Scotty Fenn's Chassis Research Company has progressed to its present production schedule that averages a total of 11 frames or complete chassis per week. It is now in a position to make or adapt any part used on a dragster, from a bolt to a complete car. Scotty goes even further by saying that he can supply cars "complete with trained drivers."

Scotty's first production design was what he called his TE440 frame. This is the frame with the pointed front end that any one who has ever been to a drag meet would recognize instantly. Scotty built over 830 of these frames before he changed the design for the K88 model. His current frame is the TE448, which does not differ considerably from the original TE440. It has the same roll bar structure but its main members form a rectangular pattern rather than a pointed one around the engine. The reason for changing the front of the frame from the pointed to the more

conventional rectangular shape was to provide room for front-mounted GMC blowers and the wider '59-'60 engines.

The original pointed frame had, as standard equipment, a semi-rigidly mounted front axle. The TE448 is designed for a leaf-type spring. Scotty believes that a sprung front axle isn't necessary for good handling but he made the change from the torsion-bar axle to the sprung assembly after making a tour of the country during which he visited many drag strips. He found that the majority of the strips he saw were so rough that a sprung front end was absolutely necessary for driver comfort.

Another feature of the TE448 is what Scotty calls a "fully-sprung rear axle mounting." The axle assembly is mechanically locked in position as far as fore and aft movement are concerned, but it and the frame can move up and down in relation to each other within the limitations provided by two 1½-ounce rubber biscuits. Movement of the axle assembly is controlled by leverage and the amount of movement is governed by engine torque. According to Scotty, the leverage can be adjusted so that the tires on the rear wheels



*Jim Nelson and Dode Martin produce this "Dragmaster" frame and front suspension assembly. Jig-built frame is light but stiff. Rectangular space-frame design has ample room ahead of driver's compartment for any engine and blower combination. The torsion bar-tubular axle-wishbone front suspension assembly is optional but highly recommended.*

## READY-TO-RACE RAILS continued

won't bite any harder than the engine makes them.

The TE448 is based on a pair of 3-inch outside diameter, .065-inch wall main members. For the rest of the frame, with the exception of the roll bar, 1½ and 1¾-inch tubing that has wall thicknesses of .065 to .130-inch, depending on the positions of the members in the frame, are used. The roll bar is made from 1¾-inch, .130-inch wall tubing. All tubing is SAE 1020 cold-rolled carbon steel.

Scotty says that he uses 3-inch diameter main members in his frames because they provide 22 times as much side strength and 15 times as much vertical strength as a space frame of the same weight. He says he uses SAE 1020 material instead of chrome-moly because it has longer fatigue life, does not work harden, lose its ductility, nor become brittle near welds. However, a frame built of 1020 tubing must be heavier than one built of chrome-moly to have the same strength.

All welding done on the frame is by certified welders. Nearly all of it is done with oxy-acetylene torches. Electric welding is used only where gas welding would be impractical due to the thickness of the material, such as on brackets and other members cut from flat steel.

Scotty believes that rigidity in a dragster frame is the most important

factor for good handling, high speeds, and low e.t.'s. He is aware of the importance of low weight but he says that low weight means nothing if the car's tires don't stay on the ground and in their correct relationship to each other so that the car will accelerate in a straight line and go where it is steered. He also believes that present dragster performance is only an indication of things to come. He says that a speed of 200 mph on a ¼-mile strip is within grasp now and that speeds much in excess of this are not too far away.

### NELSON-MARTIN CHASSIS

Jim Nelson and Dode Martin are two veteran drag racers who got into the dragster building business more by accident than by design. The frames and chassis they build are patterned after their "Master's Dragliner," which has had an extremely successful career.

Dragmaster frames are built on the space frame principle. Their members are 1½-inch diameter SAE 1020 tubing. Tubing that has two different wall thicknesses is used, depending on the make of engine that will be fitted into the car. For big engines such as Chryslers, Oldsmobiles, Cadillac, etc., tubing that has a wall thickness of .060-inch is used. For small engines, such as Chevy V8's, flathead Ford V8's and Mercurys, four-bangers, etc., they use tubing

that has a wall thickness of .049-inch. Tubing for roll bars, the rear member that supports the roll bar, and front axles is 1¾-inch diameter 1020 steel. Roll bars and the rear members have a wall thickness of .125-inch and axles have a thickness of .080-inch.

Motormount flanges in the frames are in the correct positions for the engine to be used but they are large enough to allow the engine to be moved six inches fore or aft. This range of adjustment makes it possible to obtain the required 30-70 weight distribution for different blower setups and driver weights.

Dragmaster frames can be bought without a front axle assembly but unless a fellow had something definite in mind for the front end he would be wise to buy the standard Dragmaster setup. These assemblies differ from usual dragster practice by being fitted with torsion bars. The bars are 1½-inch diameter SAE 4340 chrome-moly. They are supported by brackets that are welded to the front end of the frame and the anchored end of each bar is welded to its bracket. Connected to the free ends of the bars are arms 6 inches long that extend forward to brackets welded to the axle. The arms are connected to the bars in such a manner that they can be adjusted rotationally. This enables the front end of the frame to be raised or lowered

to change the car's traction and handling characteristics.

The axle is prevented from rotating torsionally by a small wishbone that is fabricated from 1-inch diameter tubing. Forward ends of the wishbone connect to brackets welded to the underside of the axle and its rear end is fitted with a Ford steering linkage ball joint that is secured to the center of an X-member between the frame's lower main members.

Dragmaster frames are setup for conventional automobile controls, which means brake and clutch pedals as well as an accelerator pedal. The reason Jim and Dode favor pedals over hand controls is that they think pedals are the safer of the two, especially for new dragster drivers. A fellow who has been driving a passenger car for any length of time will automatically reach for a brake pedal with his right foot in an emergency. The period of time it might take him to realize that he must use one of his hands to operate the brakes could make the difference between an accident and a safe stop. Another advantage of pedals is that they leave both hands free for the steering wheel.

#### MUDERSBACH CHASSIS

Lefty Mudersbach is the other drag racer turned dragster builder. He has been drag racing, legally, for the past five years. During this time he has built approximately 25 dragsters, 5 of which have been of the same type. He has adopted this par-

ticular type as his standard production model but he will build a car of any design for a customer as long as it will be safe to drive.

Lefty's production frame is made from 1½-inch outside diameter SAE 1020 steel tubing that has a wall thickness of .085-inch. Two lengths of this tubing are bent to form elongated U's. One of the U's is supported over the other and then the open ends of both members are brought together to form a pointed structure. The point is the frame's front end. The roll bar and its vertical support are formed from 1¾-inch high-pressure steam tubing that has a wall thickness of .125-inch. The simplicity of the frames is reflected by their exceptionally light weight of 80 pounds.

The standard front axle assembly Lefty builds for his frames has an axle made of either .125-inch wall Shelby tubing or .100-inch wall 4340 chrome-moly, depending on the customer's preference. Ends from a Ford axle are welded to the tube so that Ford spindles may be used. Perches for a cross spring are welded to the rear of the axle, in a low position. A spring that has 3, 4, or 5 leaves, as needed for the particular installation, supports the front end of the frame by means of a mounting pad welded to the frame's front end. Radius rods formed from ¾-inch wall chrome-moly tubing and fitted with Heim joints at their frame ends position the axle in relation to the frame. Rear ends of the rods pivot on brackets welded to the main frame members.

Lefty's personal dragster at the present time is powered by twin Chevy engines. He is so sure that multi-engined dragsters are here to stay that he is now building one for three Chevy's. He says that as yet he hasn't used the full potential of his twin-engined car simply because he can't handle the performance. The car goes a little faster each time he runs it but he says this is because he and not the car is improving. When he can use the full potential of the two engines, he'll be ready to start all over again with the three-in-a-row job.

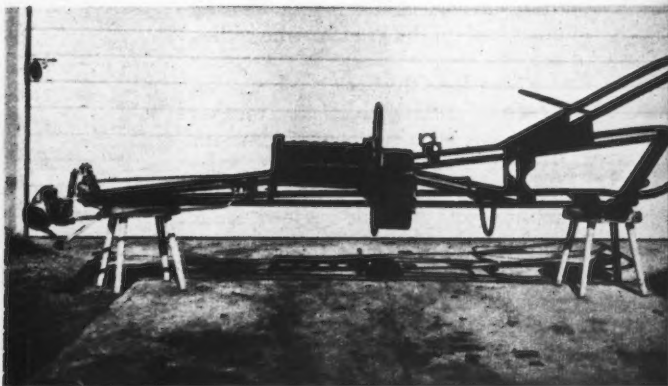
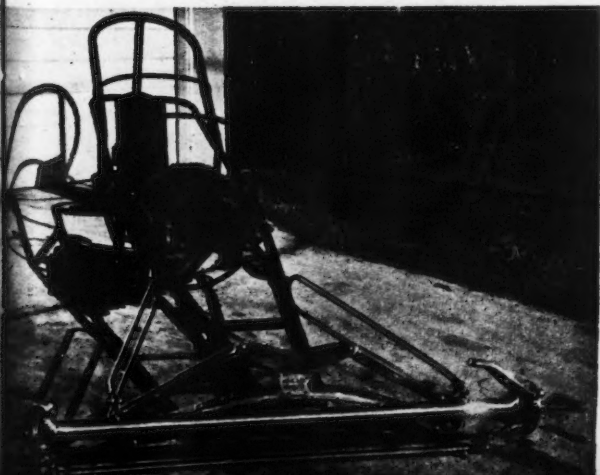
#### FULLER CHASSIS

Kent Fuller differs from his competitors by not having a standard frame or chassis design. He would rather build cars to custom order than with assembly line methods. However, he says that he can duplicate any frame or chassis he or anyone else has ever built.

He will use any type of material a customer prefers but if the choice is left to him he will use SAE 4130 chrome-moly tubing for main members. The tubing he likes has an outside diameter of 1¾-inch and a wall thickness of .049-inch. For roll bars he uses SAE 1020 tubing. He says this tubing has adequate strength because of the wall thickness of .125-inch required by drag racing associations. He feels that using chrome-moly for this member would be a waste of money. All welding, except that on roll bars and members cut from flat plate, is done with an oxy-

*Lefty Mudersbach built this dragster frame and front end assembly for drag racer Manuel Gonzalez, Jr., but he can build identical setup for you. Front axle and suspension are more or less conventional, with leaf cross-spring, tubular shocks, radius arms. Suspension allows frame movement.*

*Mudersbach frames, which are probably the lightest of the made-to-order types, are based on two main U-shaped members. Driver's cage, scattershield, and motormounts are connected to members. Simplicity of design is apparent. This particular frame was built to accommodate a Chevy V8.*



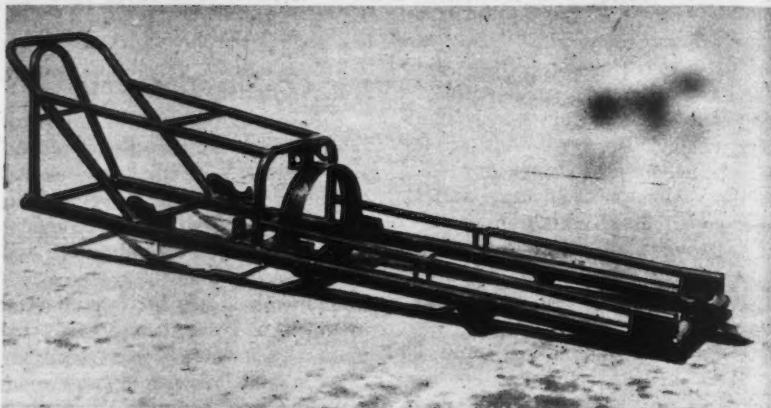
CONTINUED



# READY-TO-RACE RAILS

continued

Scotty Fenn, the Hank Ford of dragster production, has several frames in his Chassis Research catalog but the two at right are probably the most popular. The dragster frame on this page was developed to replace original pointed model, which didn't have adequate room for front-mounted GMC blowers. On facing page is Scotty's roadster frame. Frames have similar features.



acetylene torch.

Kent makes front axles of any length and contour, and for any spindles, from 4130 chrome-moly tubing. The tubing has a wall thickness of .090-inch but it varies in outside diameter from 1½ to 2 inches, depending on the weight and power of the engine that will be used in the car. Front end assemblies in all cars he builds are fitted with a spring because he feels that a sprung front end helps a car go straighter when it is accelerating.

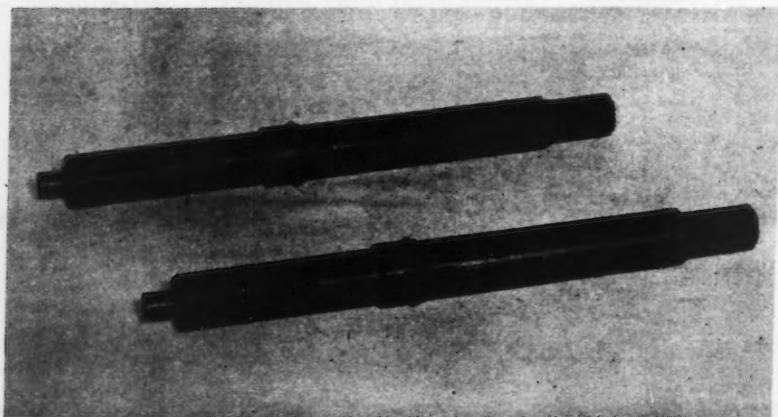
As far as performance is concerned, Kent believes that there are three important factors that must be considered when one builds a dragster. These are weight, weight distribution, and rigidity. Weight is important because it takes less energy to accelerate a given weight than it does a heavier one. Weight distribution is important because it determines the amount of traction a car's driving wheels can get and how the car will handle. Rigidity, which refers to the ability of a car's frame to resist distortion when the car is accelerating, is important if the car's wheels are to stay in correct alignment with each other and on the ground, where they belong.

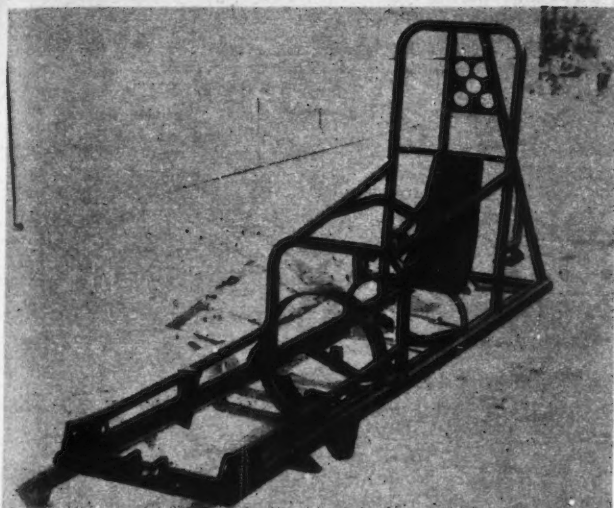
At the time this was being written Kent was putting the finishing touches on a new twin-engined dragster for Tommy Ivo. Tommy is a popular drag racer who has captured many records with a single-engined Buick dragster that was also built by Kent. It's too early at this time to tell just how successful the new car will be but there isn't any reason why it shouldn't uphold the Fuller-Ivo reputations.



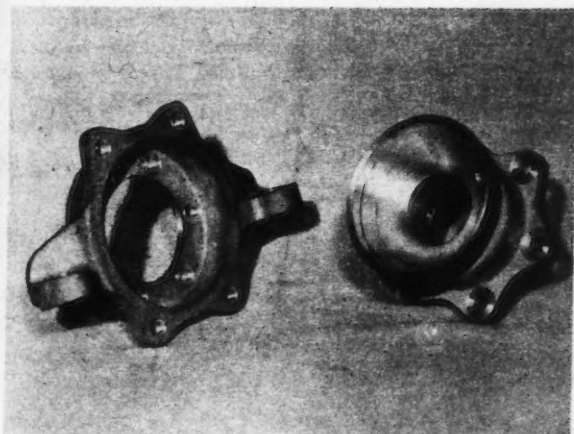
Chassis Research will soon add a competition-type steering gear to its already comprehensive line of special chassis parts. Here, Scotty shows some components.

Special Chassis Research high-gear only transmission mainshaft-clutch shafts. One is made for two driven clutch discs and the other is for a single-disc. Both are for Cad-LaSalle boxes and Ford universal joints. Special alloy guarantees strength.





Scotty's frames are designed for a unique rubber-mounted rear suspension system that is said to improve drive wheel traction. The shortened Ford rear axle housing at right is fitted with brackets for the rubber suspension biscuits and radius arms, outer end has been machined for ball bearing safety hubs.

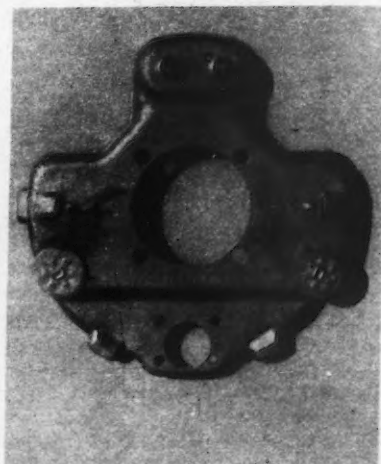


ABOVE • Chassis Research aluminum alloy universal joint housings for Ford trans and rear axle gear housings. Rear housing makes possible to connect the axle assembly directly to U-joint.

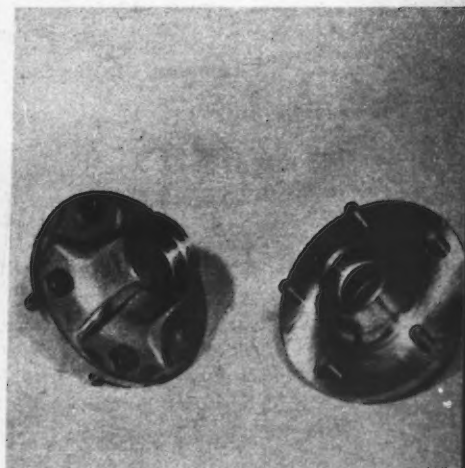


ABOVE, RIGHT • Chassis Research aluminum alloy Cad-LaSalle trans case. Clutch shafts are for Ford trans cases, have long spline for two-disc clutch.

RIGHT • Ford hydraulic brake backing plate that has been trimmed of excess weight. Scotty also has complete brake setups that are fitted with special lining.

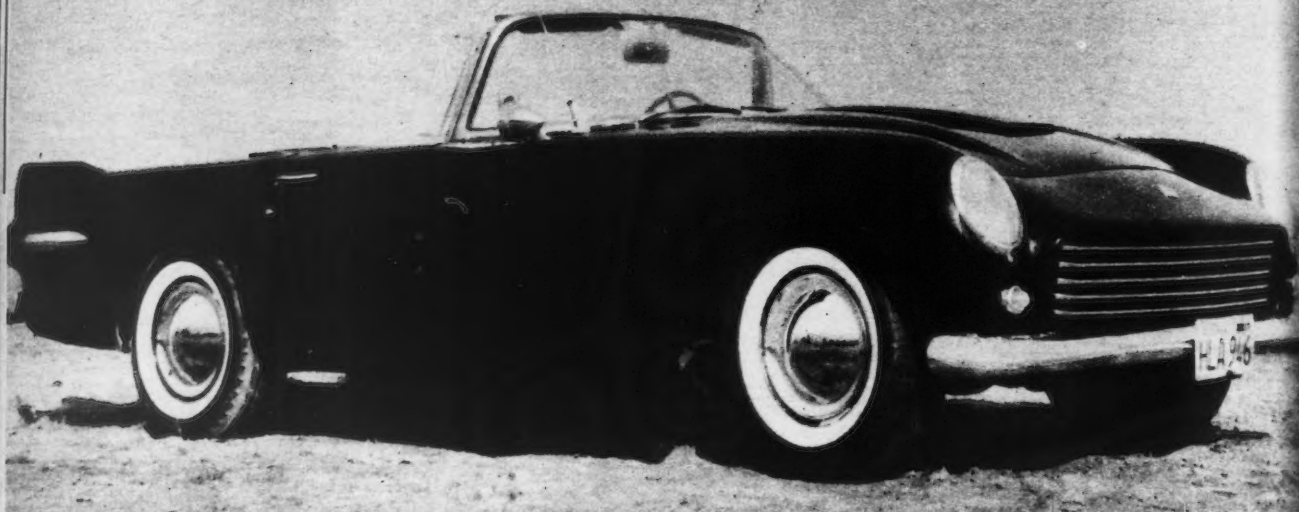


FAR RIGHT • Aluminum alloy front hubs are light weight, made for either special ball bearings or Ford roller bearings. Bolt pattern is '28 thru '48 Ford.



Desiring the 'Continental look', A. J. Lanier restyled his 'bird with a ...

# FOREIGN FLAVOR



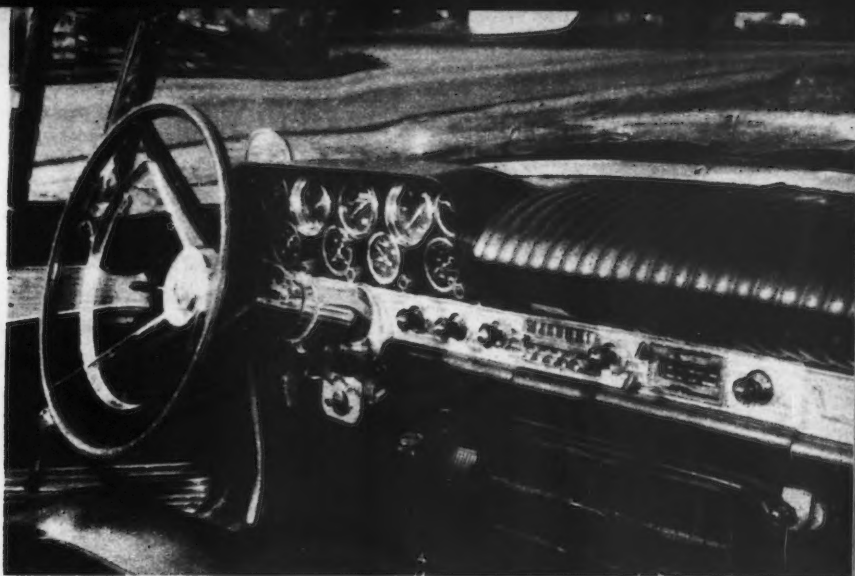
Shortly after his USAF discharge, A. J. Lanier, of Arcadia, California set about designing and constructing a truly personal car, using Ford's much heralded 'personal car', the '56 Thunderbird. Mon-Arc Motors, Monrovia, Calif., helped in building.



Front end features BMW headlights and rings set into rounded fenders. Extended and molded grille shell houses five-bar tubular assembly. Bumper is stock 'Bird with bolts welded behind, holes filled. Hood has modified scoop that is functional and dual peaks are added.







*Interior modifications remain basically stock. Main instrument and speedo cluster is replaced with a nine gauge panel that utilizes S-W products to give accurate reading of temperatures, pressures. Note air conditioning.*

*Unusual treatment of taillights results in this appealing placement of two small auxiliary lights on fender top, '59 Cadillac lens and bezel with a chrome housing set into bullet-capped fender indentation directly below.*

Photos by George Barris



*One year's period was consumed in restyling the Lanier. Black Lucite paint glistens on flawless body, rear bumper is identical to front counterpart with exception of flat exhaust tips. Fuel spout is routed into trunk, deck filled-in. Interior is in red and black color motif, work performed by Jeff's Top Shop in Monrovia, Calif. Chromed moon discs aid appearance.*

JUNE, 1960

45

# BEATING FATIGUE AT INDY

Human Engineering —  
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for man and machine



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By Norm Benedict

**I**N ORDER TO UNDERSTAND the origin and nature of hidden accident cause factors one can take note of headlines describing failures in our most modern jet airline, guided missile, and space vehicle operations. Landing gears fail to extend, pilots commit "errors", missile guidance and fuel systems malfunction with catastrophic results. Thus, if our largest scientific and engineering institutions are capable of oversights, it is possible that unrealized problem areas exist in such races as the Indianapolis "500". In reality, no part ever *really* fails — it performs exactly as it was designed, manufactured, or made to perform. Much of the same can be said of human drivers and pilots — controls must be accessible and meaningful, machine reactions should be anticipated, and the brain-computer is capable of only so many decisions per second. Our Indianapolis research has been concentrated on this latter field, "Human Engi-

neering", simply — engineering for humans — a new profession which is being enthusiastically received wherever complex man-machine operations are involved.

Our Human Engineering Group work is a Team or Systems effort composed of Physiologist, Psychologist, Anthropologist, Industrial Hygienist, and Safety Engineer. This is to assure that both a thorough and balanced research effort is obtained. It is only natural that when a person acquires a trade, skill, or profession over a period of time that he considers his specialty of primary importance. In racing, the car builder knows his streamlined product, the chassis, suspension, and the engine performance was of major importance in winning. The driver is aware of his essential role — and also that he has been put through a severe wringer; however, note the lack of "driver engineers". Do the all too frequent accidents occur through

mechanical failure or driver "error"?

Cold analysis of the Indy "500" revealed that it is not a long race as races go, while it is a fast race there are faster races, however, all drivers agree it is a *hot* race! Then is it heat that makes drivers collapse at the end of the race or else spin unexplainably into the wall, or is it "other things?" Our findings are that it is many, many things which cause the accidents which in turn create the furor in the press after every Indianapolis running.

Early in 1959 it was learned that the owners of the Johnny Thompson Championship Car would be receptive to scientific design improvements. Johnny subsequently flew out to the Pacific Coast and, being both an experienced driver and possessor of considerable World War II flying experience, understood and "bought" the suggested modifications. Our Human Engineering Group had a one word description of the car, "brutal".

CONTINUED ON PAGE 56

Photos by Don Francisco

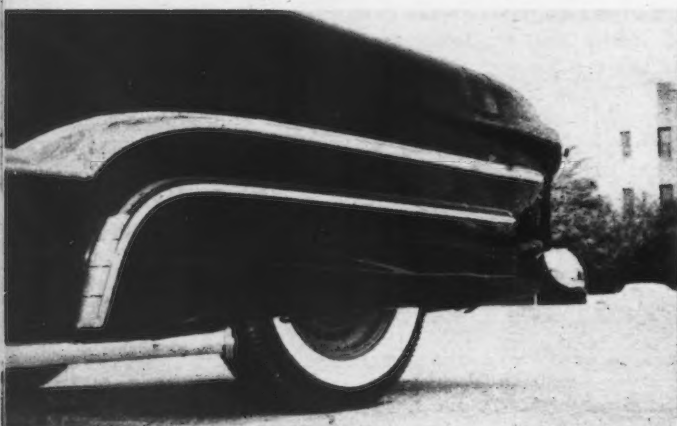
Johnny Thompson, third place finisher in the 1959 Indianapolis 500 miler, sits comfortably in the cockpit of scientifically designed car just prior to the race. In his hand is tube which leads to vacuum bottle carrying a special liquid diet designed to prevent body dehydration during the hot grueling race. Cockpit heat generated from the tires, engine and exhaust plus driver tension brought on by high speeds contribute greatly to fatigue, dulling — alertness. Building the Indy cars around the driver is the first allout attempt to combat fatigue which is undoubtedly a factor in many accidents.







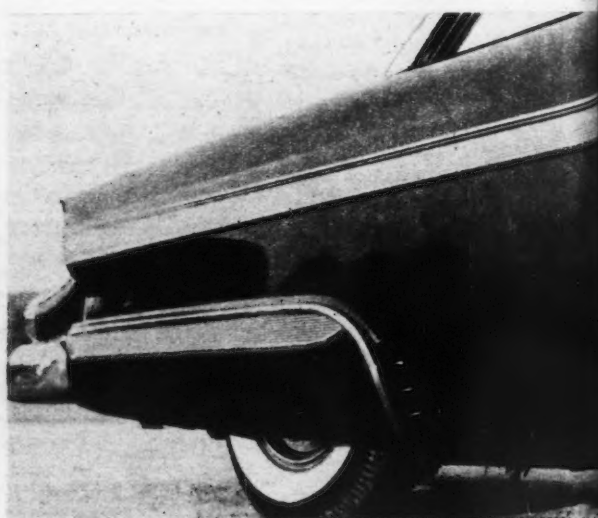
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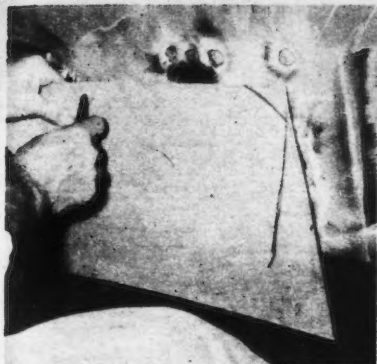


## MATING OF POPULAR '57 MERC SKIRTS TO THE '52-'54 FORDS GIVES NEW APPEAL

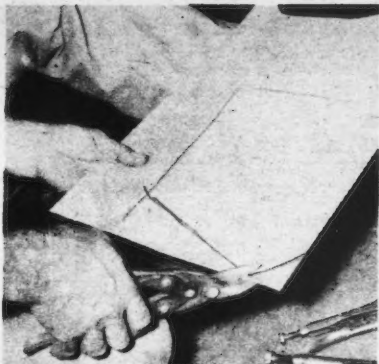
Photos by George Barris

**S**ELDOM CONTENT WITH available products that are made for the car they are driving, customizers are constantly seeking something else for that right look. Often, as in the case of the '57 Mercury skirt, they just don't seem to fit the bill. That is until a little torch work intercedes and produces that oft' dreamed of styling. At right we see an attractive adaptation of this Merc's skirt to a '56 Ford, another to a '49-'51 Ford just above. This particular model even fits up to the '55-'56 Mercs as portrayed in the upper photograph. All of these installations were relatively easy. But the owners in between who happen to own the popular '52-'54 Fords are left out unless they resort to the snips and torch. Striving to please the many owners of these particular species of Ford, George Barris altered a '54 Ford to allow use of the stylish '57 Merc skirt, covering the adaptation in a how-to-do-it fashion.

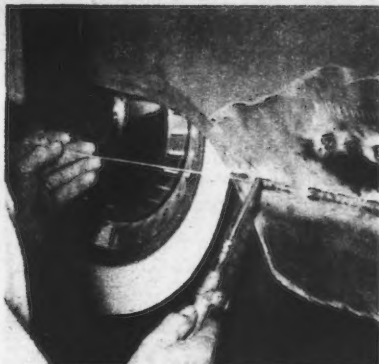




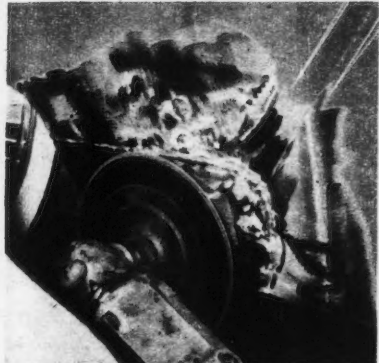
1. First step is to make a cardboard template of fender area to be filled.



2. Cut out template, trace to sheet metal, then cut pieces out with shears.



3. Following grinding of surrounding surface, braze filler section to body.



4. Work out any warp areas carefully, grind smooth with 36 closed coat disc.



5. Using electric drill, rotary brush, clean braze thoroughly for leading.



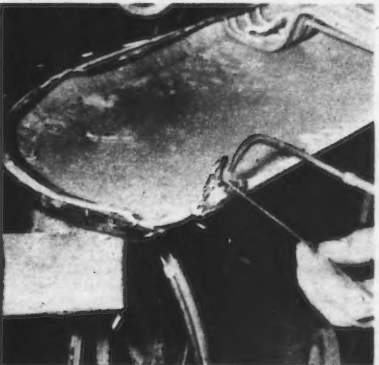
6. With steel wool tin working area, fill in with 70-30 lead, contour lines.



7. Grind leaded area with a 24 open coat disc, finish smooth with vixen file.



8. Sand reworked area with 220 grit paper, feather-edge surrounding paint.



9. After painting fender, weld mounting tabs at front skirt lower edge.



10. Two 1/4 inch holes are drilled fore and aft on fender, skirt then attached.



11. '57 Merc skirt mates right up to '54 Ford now that fender lines are conforming.

sleek styled

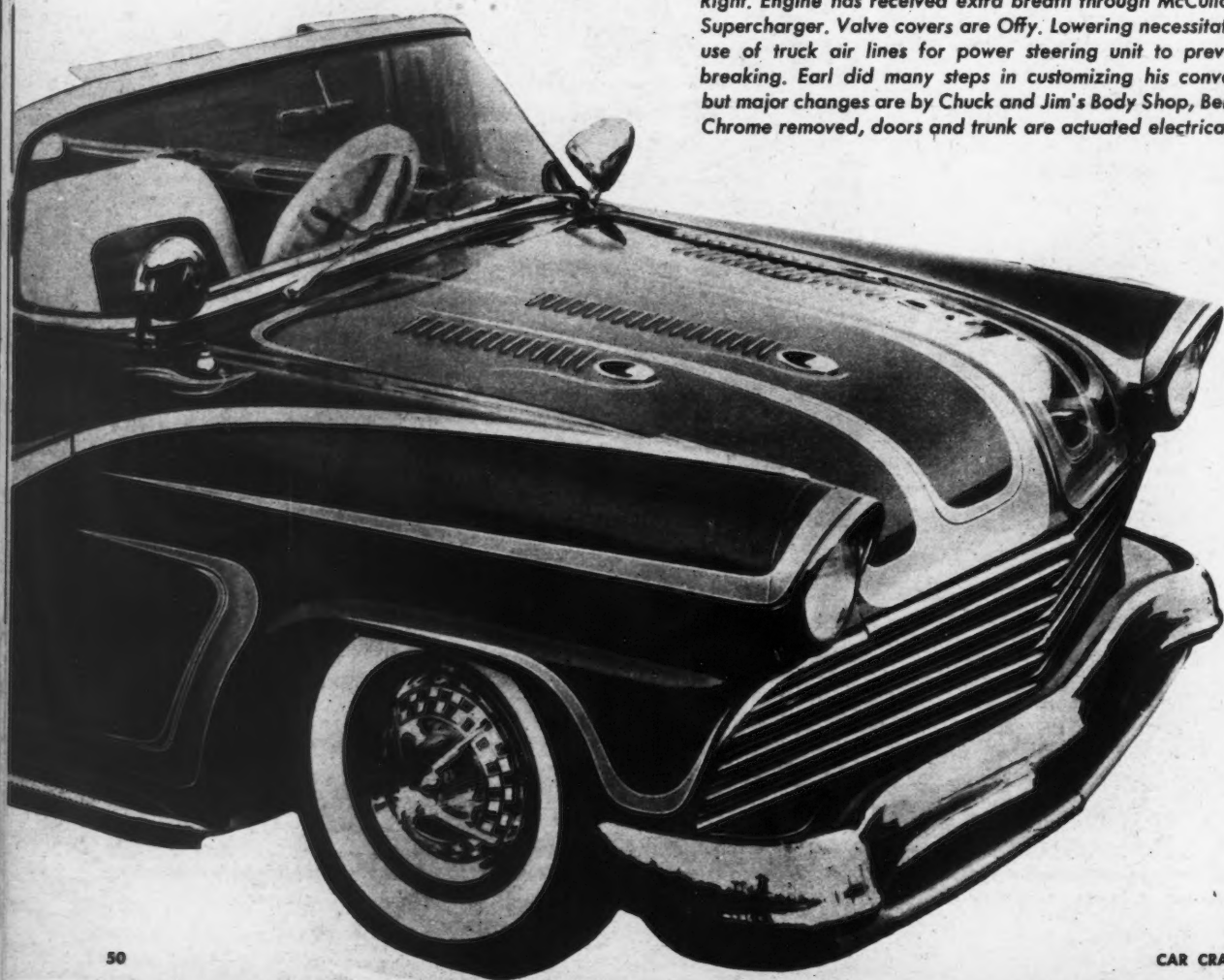
*and*

*SUPERCHARGED*



Filled hood is louvered, features Buick port holes, grille appears standard but in reality is original. Bars are made of '51 side trim. Lower grille pan is topped by frenched bumper. '55 has been lowered by cutting coils, using blocks.

Right. Engine has received extra breath through McCulloch Supercharger. Valve covers are Offy. Lowering necessitated use of truck air lines for power steering unit to prevent breaking. Earl did many steps in customizing his convert, but major changes are by Chuck and Jim's Body Shop, Bend. Chrome removed, doors and trunk are actuated electrically.

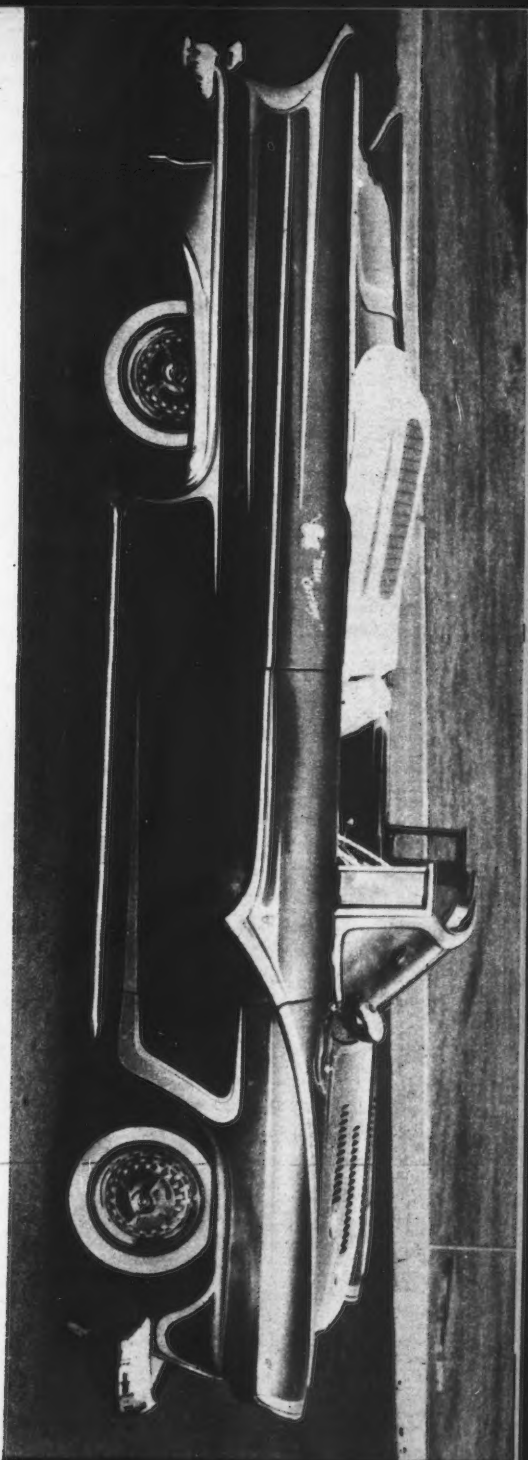




Sleek convert from Bend, Oregon belongs to Earl Clausen of the LeMans Auto Club. Red lacquer beauty was under the torch for two years, is one of many cars Earl has owned. Custom caps, spotlights, full length pipes add to sparkle.



Photos by Pete Subalac



Longer silhouette results from extended rear fenders, rear tonneau cover done up in red, white Naugahyde, matching interior. Custom rugs are black with red, white pleats. Scallops are blue.

Filled deck divides extended fenders, twin '56 Packard lenses in each fin. Station wagon bumper guards put to use.

*Good brakes are a must for today's high powered karts*

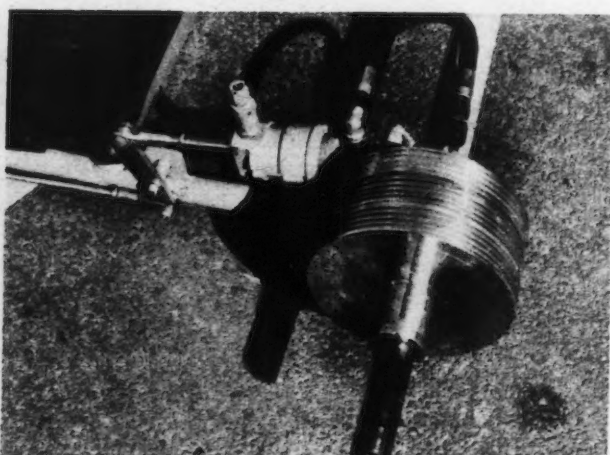
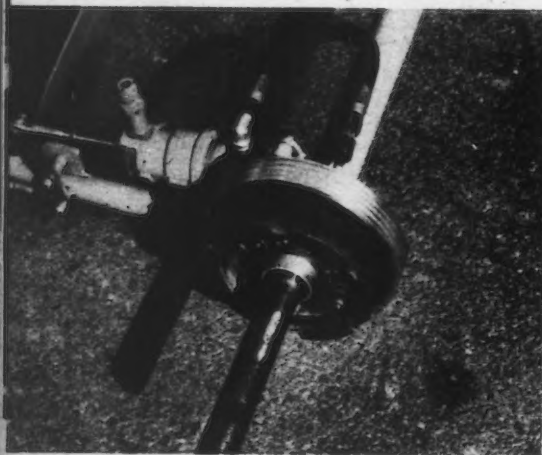
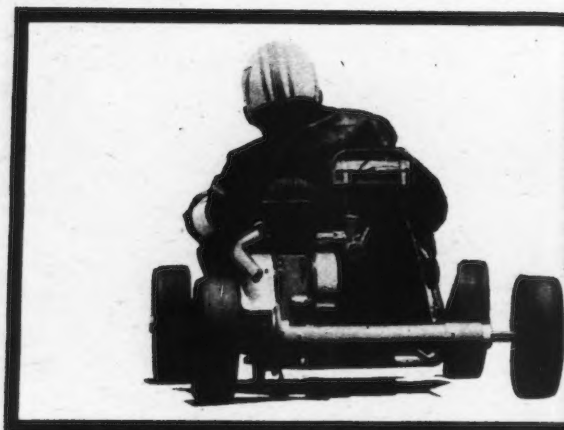
# STOP THAT KART

By Bud Lang

**I**N THE POWERFUL upper "B" and "C" classes of kart racing, driving has become a highly refined business. Pilots of these faster machines are rapidly applying many of the same driving techniques developed with successful sports car competition over the past years. Diving into tight corners at high speeds—braking at the very last moment has become a favorite practice and one that has served to separate a winner from a runner-up more than once on karting's standard miniature road race type courses. The secret behind this particular style of handling lies in the application of precision and adequate braking. Without a binder that will withstand the pressures of abuse lap after lap a kart racer is confronted with a mechanical handicap that is seldom overcome no matter how flashily he can negotiate tight twisting turns.

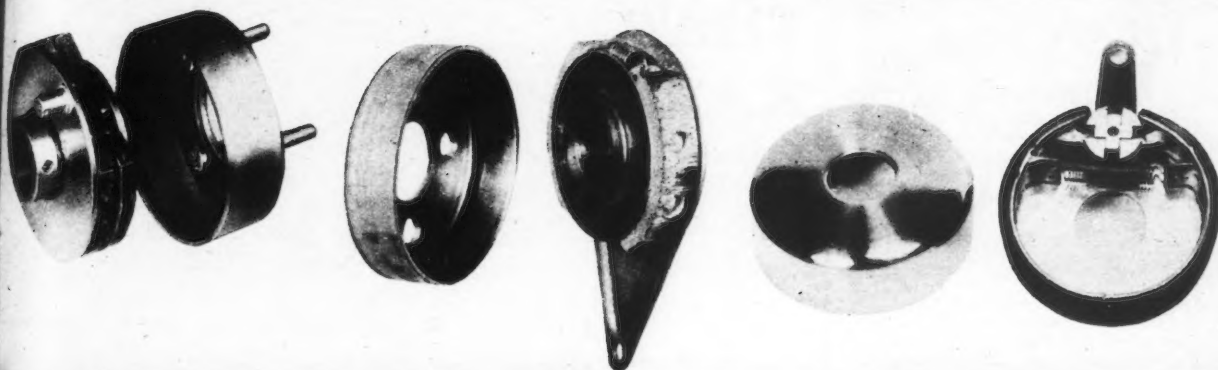
Sensing this need for better brakes, numerous manufacturers are currently producing a variety of new heavy duty brakes that have sufficient lining area and are capable of rapid heat dissipation practically eliminating the old problem of brake fading that has been so prevalent in the past. Nothing can be as detrimental to a fast, well handling kart as a set of brakes that are liable to fade after a few hot, grueling laps. This brake fault has become increasingly noticeable in recent months as more karters are appearing with hot multi-engine or motorcycle engine powered equipment. The newer, more dependable brakes are generally divided into two major categories: internal expanding brakes and spot disc brakes of hydraulic or mechanical operation. CAR CRAFT is presenting many of these products in an effort to show the offerings available in this extremely important

CONTINUED



An excellent example of ingenuity from karters is this conversion of an aircraft hydraulic internal expanding type brake for karting by Larry Gale. He utilized a simple hydraulic cylinder to expand the six 1 1/2 x 2 inch shoes out against a steel sleeve pressed into a homemade aluminum brake drum. Bell crank gives fast response.

*Mercury heavy duty brake at left comes in different axle bores, for left or right wheels, features heavy gauge steel housing, long wearing brakes shoes, will not rust. Fairbanks-Morse internal brake in center has two heavy duty linings riveted to shoes. Fit both wheels, two axle sizes. Springs disengage brake. At right, E-Z Machine & Tool Works full band expanding brake is unique. One nut allows external adjustment, brake band floats in drum, will not cause cramping.*

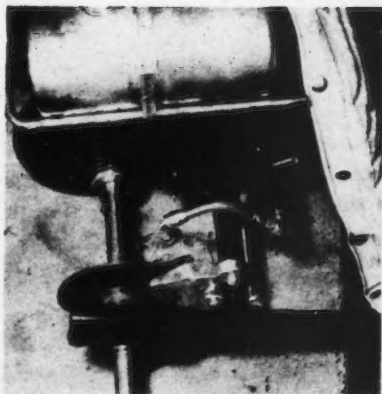
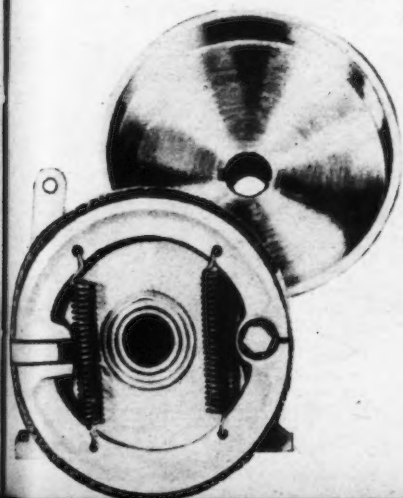
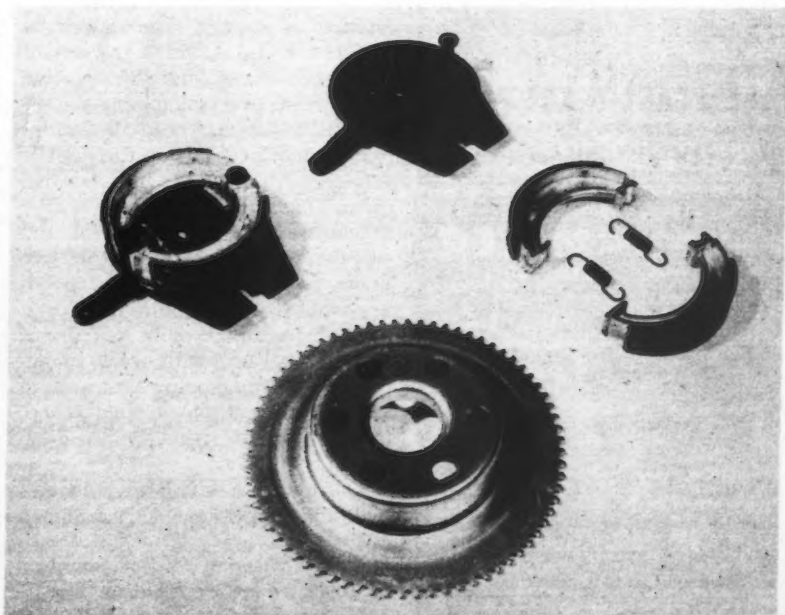


*Right. Simplex Challenger brakes are two-shoe automotive internal expanding type. Long life linings are riveted to lightweight aluminum alloy brake shoes.*

*Below. 4 1/2 inch Olds Machine Products kart brake features a Tenzaloy hard aluminum brake drum, sealed ball bearing. Heavy linings are of bonded type.*

*Below Center. Utilizing a surplus aircraft brake, this karter built his own stopping power. Hydraulic disc brake was originally designed for helicopters.*

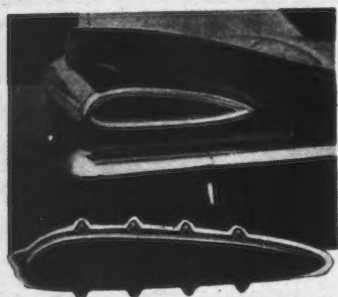
*Far right. Several surplus aircraft disc spot brakes are available, many have been adapted easily to karts. This one is a Goodyear set up on a Kurtis Kraft Kart, is standard equipment.*





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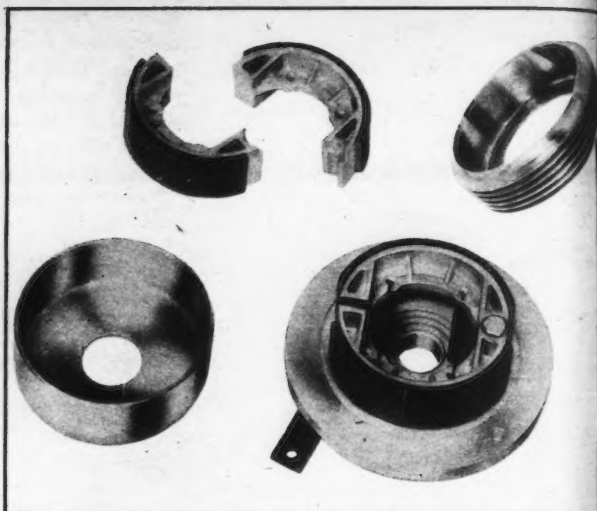
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## STOP THAT KART

continued



Raybestos racing linings bonded to precision cast aluminum brake shoes give the Moss Engineering competition brakes a total of 11 square inches of durable braking surface. Are designed for live or dead axles, have finned aluminum drum.

division of karting. The individual owners are also included as many of them have been engaged in adapting brakes from everything from motor-scooters to helicopters in an attempt to have the "best to stop the most."

Generally speaking, the internal expanding brakes are quite similar in construction and operation and are designed after the automotive brake, having one or more expanding shoes with bonded linings. Though the brake shoes and drums are light to begin with, a few manufacturers are employing aluminum in an effort to cut down weight and, more important, speed up heat dissipation.

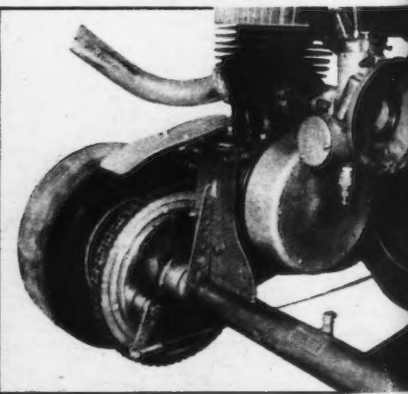
The spot disc brakes are mostly of hydraulic principles, being designed

exclusively for karting or are custom made from aircraft brakes. These disc brakes are becoming popular with karters, especially on the multi-engined or motorcycle engine powered karts, due to their operation and ability to remain cool as the disc is exposed to the air at all times. Many of the better internal expanding brakes offer greater lining surface than spot brakes presently in use, and this alone accounts for the greater number of this type being used.

Both those of assembly line heritage and the custom brakes designed by just plain karters are far superior to any used when the karts first began to roll from the assembly lines. This alone is worthy of the scrutiny of all karters.

Palmini Engineering produces spot type hydraulic brake with floating, blanchard ground disc, is strong and light..

AJS motorcycle brake adapted to kart is 7 inch, has aluminum shoes, molded linings, sold by Bill Landefeld Motors.



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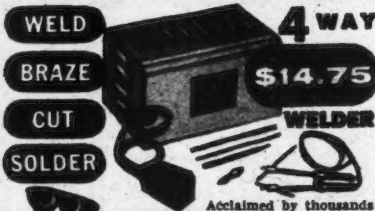
(not a paint) impregnates leather or vinyl plastic upholstery. Won't chip or peel. Fadeproof, waterproof. Use on home & lawn furniture. Write for free information, color chart, and dealer location.

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by Willie Ito



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## BEATING FATIGUE AT INDY

continued

True, the car was low, light, steered relatively easy, and was reasonably roomy. However, output from the Meyer-Drake engine was accompanied by tremendous heat, vibration, and noise. The uncovered firewall, driveline, oil tank, and huge adjacent rear tires promised quantities of invisible radiant heat. At this point certain observers are quick to point out that a driver must be *tough*, however, being "tough" involves more than a determined attitude and bulging muscles. The human being can only stand body temperature increases of a few degrees, not too much noise and vibration, and limited intake of toxic fumes—whether he knows it or not.

To illustrate Human Engineering Team corrective action with respect to vibration, let's say I bring up the point to Jim Raeke, Physiologist. Jim ascertains that harmful internal effects including visual blurring could result, and coordinates his

recommendations with Joe Young, Anthropologist. Joe is essentially a bone-and muscle man who appreciates the capabilities and limitations of the linkages afforded by the skeleton, joints, and muscles; he recommends a tailor made seat form-fitted to the driver with vibration dampening in the laminated seat cushion and steering wheel—points where the driver comes most in contact with the car. Ken Hartman would like to give Psychological Tests to the driver to attempt to get an indication as to how he might perform under stress. Orval Minney, Industrial Hygienist, would make recommendations relative to high stress diets, limitation of intake of toxic fumes, etc.

If this sounds overly detailed, consider the case of the car owner who invests a small fortune in a "500" car only to have his driver come in shortly after the start of the race with legs virtually paralyzed. The seat appeared identical with other seats

CONTINUED ON PAGE 58

Form-fitting seat is tried out by Thompson. Compact roadster was built and designed by Lujie Lesovsky for Racing Asso., Inc. Seat cushions contain vibration dampening material to absorb much of road shock received during the 500 miler.



CAR CRAFT





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## COMING EVENTS

### NHRA DRAG SCHEDULES

Dothan, Ala.—6/19; 7/17; 8/28; 9/18. Napier Drag Strip.  
Carlisle, Ark.—2nd Sun. ea. month. Arkansas Timing Assn.  
Colton, Calif.—Ev. Sun. Colton Drag Strip.  
Eureka, Calif.—1st & 3rd Sun. Humboldt Timing Assn.  
Holtville, Calif.—2nd Sun. Imperial Valley Timing Assn.  
Inyokern, Calif.—3rd Sun. Dust Devils Auto Club.  
Palmdale, Calif.—4th Sun. Antelope Valley Timing Assn.  
Pomona, Calif.—Ev. Sunday starting Apr. Lions Club.  
Redding, Calif.—3rd Sun. ea. mo. Shasta Roadsters, Inc.  
San Luis Obispo, Calif.—3rd Sun. San Luis Obispo Co. Timing Assn.  
Santa Maria, Calif.—1st Sun. Dragons, Inc.  
Taft, Calif.—3rd Sun. Taft Dragsters, Inc.  
Visalia, Calif.—4th Sun. Vapor Trailers.  
Grand Junction, Colo.—Apr. 10 & ev. other Sunday.  
Grand Junction Hot Rod Council.  
Julesburg, Colo.—5/15; 6/12; Platte Valley Custom Club.  
Davie, Fla.—2nd & 4th Sun. Broward Auto Club.  
Kissimmee, Fla.—1st Sun. Central Fla. Timing Assn.  
Miami, Fla.—1st & 3rd Sun. South Fla. Timing Assn.  
Venice, Fla.—1st Sun. Vagabonds, Inc.  
Mansfield, La.—open 5/15 & 3rd Sun. ea. mo. Jaycees & Ark-La-Tex Timing Assn.  
Opelousas, La.—reopen Apr. 3 & 2nd Sun. ea. mo. Pel-Stat Drag Strip.  
Sanford, Maine—open May 8 & ev. other Sun. New England Hot Rod Council.  
Orange, Mass.—open May 15 & 3rd Sun. ea. mo. New England Timing Assn.  
Minneapolis, Minn.—reopen Apr. 17 & ev. other Sun. Twin Cities Optimist Club Timing Assn.  
Dorham, N.C.—2nd Sun. each mo. Bazeman Racers.  
Henderson, Nev.—2nd & 4th Sun. Industrial City Timing Assn.  
Hobbs, N.M.—1st Sunday. Charlotteers Auto Club.  
Roswell, N.M.—3rd Sun. Dusters Auto Club, Walker AFB.  
Alto, New Jersey—Ev. Sunday. South Jersey Timing Assn.  
Vineland, New Jersey—reopen 4/24 & Ev. Sun. thru 5/29; Ev. Sat. nite thru 9/17. Vineland Speedway.  
Oklahoma City, Okla.—ev. Sunday. Oklahoma City Drag Strip.  
Tulsa, Okla.—1st & 3rd Sun. Tulsa Timing Assn.  
Charlestown, R.I.—5/1; 6/5; 7/9 & 10; 8/7; 9/11; 10/2. So. New England Timing Assn.  
Columbia, S.C.—Ev. Sat. Nite. Palmetto Dragway.  
Abernathy, Texas—4th Sun. Tri-City Drag Assn.  
Arlene, Texas—2nd & 4th Sun. Abilene Jaycees.  
Amarillo, Texas—open May 8 (tent.) & ev. Sun. Amarillo Dragway.  
Caddo Mills, Texas—1st Sun. North Texas Timing Assn.  
Ft. Worth, Texas—2nd & 4th Sun. Tarrant Co. Modified Auto Assn.  
Wichita Falls, Texas—2nd Sun. ea. mo. Red River Drag Strip.  
Petersburg, Va.—Sat. afternoon thru May; Ev. Sat. nite commencing June.  
Roanoke, Va.—Ev. Sun. Roanoke Dragsters Auto Club.  
Bremerton, Wash.—5/8; 6/5; 7/3 & 4; 8/14; 9/11 & 25; 10/9 & 23. King Co. Youth Auto Council.  
Mt. Vernon, Wash.—5/1 & 15; 6/5 & 19; 7/10 & 24; 8/7 & 14. Bayview Timing Assn.  
Cheyenne, Wyo.—reopen 5/1; 6/26; 7/31; 9/4-5; 10/30. Cheyenne Timing Assn.

### NHRA BONUS POINT CHAMPIONSHIPS

#### Divisionals

Pomona, Calif.—July 3 & 4.  
Minneapolis, Minn.—July 3 & 4.  
Alto, N.J.—July 3 & 4.  
Oklahoma City—July 3 & 4.  
Columbia, S.C.—July 2 & 4.  
Bremerton, Wash.—July 3 & 4.

#### Regionals

Hobbs, N.M.—June 4 & 5.  
Amarillo, Texas—May 28, 29, 30.  
Caddo Mills, Texas—Aug. 6 & 7.  
Ft. Worth, Texas—July 23 & 24.

### SHOWS

Ventura, Calif.—May 21-22; Ventura Co. Car Show, Dwarf Car Club.  
Hamden, Conn.—May 15; Rod & Custom Show; Custom Rods Club.  
Baltimore, Md.—July 30-31; Eastpoint's 2nd Annual Rodarama; Eastpoint Shopping Center; Power Paks.  
Asheville, N.C.—May 13-14-15; Custom Toppers Club Autorama; Civic Auditorium.  
Lima, Ohio—June 24-25-26; Rod Custom Review; Allen County Fairgrounds; Route 30 S and 117.  
Hagerwell, Va.—May 14-15; 2nd Annual Rod & Custom Exposition; Armory; Thundering Turtles Club.  
Ogden, Utah—May 14-15; Salt Kings Rod & Custom Review; Golden Spike Coliseum; Merchants & Salt Kings Clubs.  
Lethbridge, Alberta—May 27-28; 3rd Annual Custom & Rod Show; Lethbridge Arena; Gov'nors & Autocrats.

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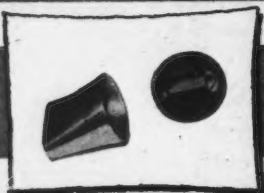
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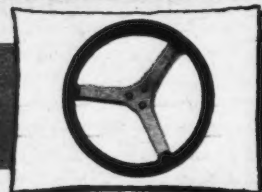
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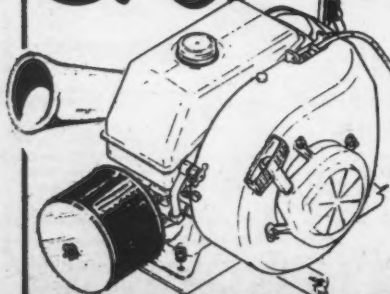
## BEATING

in that it was fitted by the builder  
to the driver's static comfort; unfor-  
tunately it had a large edge roll  
which cut off blood circulation from  
the driver's legs when the car was  
in operation. Add heat, drilling noise,  
dehydration, hand dulling vibration,  
some blisters and metal stress and  
you can appreciate how a car can be  
built, but *not* for a human to drive.

The 1959 Johnny Thompson car  
contained some new human engineer-  
ing innovations. Dr. Lynd Esch, An-  
thropologist with the Team at the  
time, developed a special form-fitting  
seat and shoulder rest complete with  
vibration-dampening padding and a  
cover material that would "breathe".  
Jim Raeke provided for the first time  
a liquid diet contained in a vacuum  
bottle to be taken during the race to  
maintain proper blood sugar levels  
in addition to preventing harmful de-  
hydration. New cover material to  
reduce radiant heating was provided  
also; in short, the car was literally

Covered with special material designed  
to "breathe," tailor-made seat gives  
utmost in driver comfort, cooling ability.  
Vibration dampening material cushions  
road shock, keeps legs from numbing.

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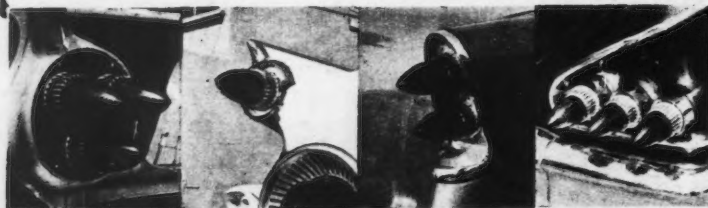


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# BEATING

The confidence a driver gains from knowing everything possible has been accomplished to insure his safe performance is extremely important. Pre-race discussions with Thompson covered everything from his winter work and daily eating right down to the condition of the muffler on his passenger car which he frequently drove long distances to races. While this research was fairly extensive, it is considered just the beginning for optimum racing. A 1959 Indianapolis requirement was that all drivers wear fireproofed clothing and leather gloves—this sounds reasonable until analyzed fully. Fireproof clothing is clothing which has been dipped in special solutions which incidentally makes the material hotter and irritating to the skin. Actually, while the material will not readily burn, it constitutes a flimsy and doubtful barrier at best. However, in the majority of cases fire, from unconfined fuel, is the result and not the cause of accidents.



# FATIGUE continued

The proper corrective action would be to determine more accurately the cause of spinouts, etc., and put emphasis on containing fuel within the tanks. It is far less hazardous to add some pounds of structure and sealants to tanks than it is to raise the drivers body temperature a few degrees in an already overwhelming environment. Although Indianapolis is an all-out effort, drivers insist they have to clearly hear the exhaust roar. After a short exposure to nerve cell killing decibel levels, it's doubtful the driver is accomplishing anything other than expediting his own fatigue.

Racing involves a close man-machine relationship, and it is obvious that man is the weakest link in the chain. However, *true* racing supporters realize the future of racing always hangs in balance, and that the problem is solved only by research which results in longevity of the man, machine, and subsequently to the racing game itself.

Cockpit shot shows seat developed by Dr. Lynd Esch, Anthropologist working with team in producing fatigue defeating car. Recessed hub steering wheel by Bell Auto Parts also reduces harmful vibration and lessens the hazards.



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**convert from column shift to the world's fastest floor shift!**

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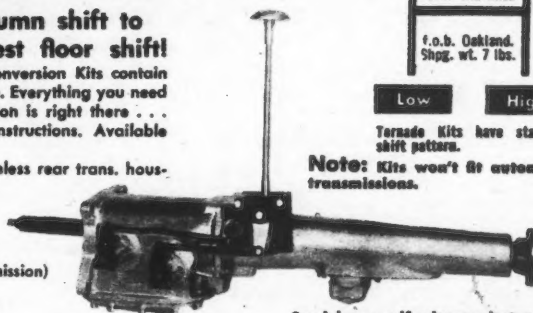
1946-51 Lincoln

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1949-60 Chev

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Send large self-addressed stamped envelope for free brochure.  
**HOW TO ORDER:** Specify year & model car, also if overdrive or not. Enclose \$7.50 dep. (bal. c.o.d.).

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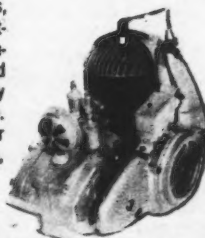
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## COMPLETE CHEVY CHANGE

Dear George:

Thus far, I have dechromed, decked, bull-nosed and added dual spots to my '49 Chevy four-door. Further modifications that I plan: 1. '50 Oldsmobile 88 windshield; 2. '51 Olds top grille bar; 3. '52 DeSoto grille bars; 4. '55 Buick side trim; and 5. '58 Chevy Impala taillights. What do you think of these changes?

The only trouble I have now, is the front and rear bumpers. What can I use?

—Ed Berry  
LaMirada, Calif.

With but a couple of items, your plan for customizing the Chevy sounds very good. I would say go ahead and do it! The Olds windshield will fit without any glass cutting and since this is the major obstacle in this type of part swapping, you won't have any trouble. The front fenders will have to be slightly modified to accommodate the Olds upper grille bar, but the amount of work will be slight, so this too gets the go ahead sign.

Probably the easiest grille you can install is the DeSoto assembly. The individual bars bolt right onto your gravel pan. All you'll be concerned with is drilling and placement.

For all new chrome trim, you'll have to fill in the stock holes. This could be a problem but it depends on your past metalwork. The Buick trim is fine. Here's the scoop on that: Fill old holes; cut and fit Buick trim to front fenders and doors; check quarter panels to make sure that trim will clear door crease; attach.

The Impala taillight plan is good. It will be original, too. That's the most important.

Bumpers shouldn't be a problem. '50 Pontiac components can be made to fit without much changing. They're practically like the Chevy.

## PLYMOUTH PROBLEMS

Dear George:

I am in the process of customizing my '51 Plymouth, but have met with three problems. First, can I adapt the square steering wheel from a '60 Plymouth to my model? Secondly, what taillights should I use? And finally, what grille can I install without any metalwork involved?

—Philip Foster  
Lebanon, Penn.

I'm afraid the steering wheel from the '60 Plymouth will not fit your car. The shaft will have to be machined to fit and since this involves some outside shop work, you'll have to determine whether or not it is worth the trouble.

Taillights should be easy. I suggest you cement '59 Imperial lenses to the stock '51 Plymouth units. This is extremely easy and will be original. The only bolt-on grille for your particular car is the chrome bullet kit that can be found in most auto accessory stores, but if you can't find it for some reason, write California Custom Accessories. They stock it as well as manufacture it.

## STUMPED FOR GRILLE

Dear George:

I'll make it short and sweet. Any suggestions for a sharp grille for my '48 Chevrolet?

—Gerry Donahue  
Torrance, Calif.

Yes. The simplest type of grille for the '48 is one composed of drawer pulls on a mesh screen grille. A large selection is available to give your grille a definite different appearance. Back issues of Car Craft and our companion magazine Custom Cars have complete information if you don't know it already.

## 'CHANGE THAT CAT-FISH GRILLE'

Dear George:

Before I have my '53 Oldsmobile painted, I want to do a little custom work. Mainly, I want to change that cat-fish mouth grille. Any suggestions would be appreciated as I'm at a complete loss. I would also like any ideas you might have for a new headlight and taillight switch.

—Mrs. Kay Brown  
Oklahoma City, Ok.

You'll be faced with major alterations if you want to build a nice front end arrangement. I think you should french the upper grille shell bar. You might want to make it almost oval in shape. This will entail changing the bumper, which is just as well, because there is too much vertical height between the bumper and the upper grille bar. I think you ought to roll the front pan and add '60 Buick split bumper bars. This will really be nice.

For taillights, I would install the '60 DeSoto units. They are very attractive in appearance and will not be too hard to install. You will probably run into the same amount of trouble to install these assemblies as you would with any other.

For a really different headlight arrangement, try the '59 Ford Lift-cab Truck assemblies. These are the easiest quads for your particular model and they have a certain quality about them that is not found with the other popular quad light change-overs.

If you do perform these alterations, you will really be driving a sharp automobile. It will be different, unique, and what is more, it will be attractive.



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## WHAT'S YOUR PROBLEM?



By Don Francisco

#### A REAL GURGLER

Dear Don:

I recently bought a 1960 Pontiac Catalina hard-top coupe. It's really a crazy car. It has plenty of power, rides good, and is, I think anyway, the best looking car on the road. But there is one thing about the car that is driving me nuts, and that is its heater. Whenever I step on the throttle to accelerate from a stop I can hear the water rushing through the heater. You'd have to hear this sound to understand how bad it is. The noise occurs only when the heater is turned on but what I would like to know is if there is any way of stopping it other than by leaving the heater turned off. It gets mighty cold in this part of the country.

— Jerry Palmer  
St. Paul, Minnesota

Early-production 1960 Pontiacs were afflicted with the heater characteristics you describe. The Pontiac factory "fix" for the condition is a different outlet fitting in the engine for the heater hose. This fitting bolts to the front of the right cylinder head, replacing the flat steel plate that was bolted to the head originally to cover a water outlet opening. The fitting replaces the one used originally in the front of the intake manifold. Remove the original fitting from the manifold and plug the opening it leaves with a 3/8-inch pipe plug. It may be necessary to replace the heater hose with one a few inches longer so that it will reach the new fitting. This seemingly minor plumbing change should make your heater completely silent as far as water circulation through it is concerned.

#### HIGH ALTITUDE PROBLEM

Dear Don:

I have a question that has been bugging me for several months; it concerns the vacuum-controlled power valve in a carburetor.

Vacuum-controlled power valves are designed to open when the pressure in the engine's intake manifold reaches a certain value. What I have been unable to determine is

whether this value changes as the elevation of the road on which the car is being used changes. On paper, making the allowances that would seem necessary for changes in atmospheric pressure, it appears that the power valve would open at a higher pressure as the elevation became higher. My reasons for this determination are that the spring that opens the valve acts against a combined force exerted by manifold vacuum and atmospheric pressure and that as elevation increases, this force becomes less while the force of the spring remains the same.

I've asked a lot of mechanics about this and tried to find the answer in several books I have but neither the mechanics nor the books have provided any enlightenment. Do you have any information on this, or do you know where I might find an answer?

— David Parker  
Denver, Colorado

From all indications, power valves of the type you describe open at approximately the same manifold pressure at high elevations as they do at sea level. Personal experience with a Rochester two-throat carburetor proved this to me and information received from a carburetor engineer verified my findings.

I made my tests with an exhaust gas analyzer, which gives an adequately prompt response to power valve opening by indicating the richer mixture delivered by the carburetor to the engine, at altitudes ranging from below sea level to approximately 6400 feet above sea level. In all instances the power valve started to open at approximately 7 1/2 inches of vacuum.

One effect that altitude does have on the relationship of the opening time of the power valve to manifold vacuum is that the range between the valve's opening time and the engine's idle or cruising vacuum becomes smaller as altitude increases. The change is just a little less than 1 inch of vacuum for each thousand feet of altitude. This means that less throttle opening is required at high elevations to reach the power valve's opening point. Some automobile manufacturers have recognized this condition and supply special high-altitude springs for power valves in the carburetors used on their engines. These springs lower the opening point of the valve so that the difference between idle and cruising vacuum and the opening point remains closer to that for sea level conditions.

Because of the approximately 5000-foot elevation of Denver, you might possibly decrease your engine's fuel consumption by installing such a spring if one is available for your carburetor. However, the improvement in fuel mileage gained from such a change would depend on how often you opened your car's throttle wide enough to cause the power valve in its carburetor to open.

#### PRESSURE CONTROL

Dear Don:

Is it true that nitrogen instead of compressed air is used in the tires of

cars run on the Indianapolis Speedway? If so, why? Does it make the tires last longer, or is it lighter, or what?

— Dean Jennings  
Waco, Texas

Yes, nitrogen is used in the tires of cars run at the Brickyard. It is an inert gas, which means that it will not support combustion, and it is lighter than air, but the main reason it is used for tire inflating is that it does not contain any moisture.

Compressed air, unless it has been specially processed, contains a certain amount of moisture, the actual amount depending on the humidity of the area in which the air was compressed and the amount of condensed water allowed to remain in the tank in which it is stored. This moisture, when trapped in a tire, becomes heated by the tire when the tire's temperature raises during normal or high speed driving.

Tire heating is unavoidable because of the flexing a tire undergoes as it rolls along a road surface. As the moisture is heated, it expands and causes the pressure in the tire to become greater. This makes it impossible to control the pressure in the tire within the narrow limits required for satisfactory tire life and good car handling characteristics.

#### STOCK PARTS

Dear Don:

I have a '53 Chrysler V8 engine on which I am going to install a standard-shift transmission.

As you may know, these engines were all equipped with automatic transmissions. I have found by searching the local junk yards that there is a bell housing and stick transmission that fit almost perfectly. My problem is about the flywheel to use. I have heard that there is a Dodge V8 truck flywheel which fits but these flywheels seem to be very scarce.

Is there something a little more popular that also fits this engine? The clutch is no worry as I will use whatever fits the flywheel.

— David McGuire  
Toledo, Ohio

Many Chrysler products — Chrysler, DeSoto, Dodge, Plymouth, Dodge trucks — have interchangeable parts. Among these are flywheels. Dodge truck wheels are usually recommended for Chrysler V8 engines to be used with synchromesh transmissions because it is a simple matter to go to the local Dodge agency and buy a nice shiny new one over the counter. That's what I recommend you do; however, if this approach doesn't appeal to you it might be worthwhile to spend a little time at the neighborhood wrecking yards with a cardboard template of the flywheel flange on your engine's crankshaft. You might find a wheel from some other Chrysler product that will fit it. Be sure, though, when installing a wheel that fits the flange that it also clears the rear surface of the cylinder block and the inner surfaces of the bell housing and that it meshes correctly with the drive gear on the engine's starting motor.



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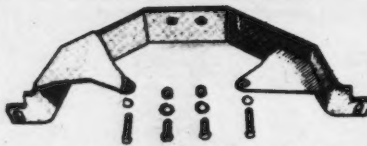
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HONEST No. 77  
Each \$1.95  
We Pay Postage

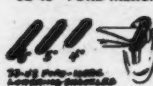
**HONEST**  
No. H-4 EACH — \$1.00  
We Pay Postage

## HYDRAULIC CLUTCH SLAVE CYLINDER KIT



Above For All Exc. 32-39 Ford Use With Any Master Cylinder  
32-39 FORD KIT WITH BRACKET No. 8 Complete as Shown . . . . . EACH \$19.95  
KITS FOR ALL OTHER CARS No. H-9 . . . . . 16.95  
We Pay Postage

## LOWER YOUR 32-48 FORD-MERC.



4" Shackle Gives 2" Drop at Bumper  
5" Shackle Gives 3" Drop at Bumper  
6" Shackle Gives 4" Drop at Bumper  
Set Of Any Above \$1.00 (We Pay Postage)

## "CHROME DOME" OIL BREATHER CAP



File:  
Buick - 1953-55  
Cadillac - 1937-60  
Chevrolet V-8 - 1955-60  
Chrysler - 1937-60  
De Soto - 1937-60  
Dodge - 1937-60  
Ford - 1949-60  
Lincoln - 1954-60  
Mercury - 1949-60  
Oldsmobile - 1949-60  
Plymouth - 1937-60  
Pontiac - 1937-54  
Studebaker - 1953-60  
No. H-10 Each \$1.95  
We Pay Postage

**HONEST LAKE PLUGS FOR ALL CARS AT A THINKING MAN'S PRICE**  
We Slashed The Price On These Equal in Quality To Sets Costing As Much As \$30.00.



Triple Chrome Plated 18 Gauge Steel Tubing  
Direct Exhaust Escape with plates removed boosts power for competition running.  
Packed in pairs, kits are complete with blocking plates, gaskets, chrome hangers, and all fasteners.  
HONEST Nos.  
HP28 Complete 28" Kit for both sides . . . \$ 9.95  
HP56 Complete 56" Kit for both sides . . . \$21.95

SEND 25% DEPOSIT ON C.O.D.'s. NO C.O.D. FOR LESS THAN \$5.00. ALL ITEMS MARKED PREPAID MUST BE PAID IN ADVANCE.

Enclosed is \$ . . . . . for payment in full (or deposit of 25% if C.O.D.)  
All items marked prepaid must be paid in advance.

NAME . . . . .  
MY CAR IS A . . . YEAR . . . MODEL . . . BODY . . .  
ADDRESS . . . . .  
CITY . . . . . Zone . . . . . STATE . . . . . 5-60  
Quantity Stock No. Description Price

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ORDER BY MAIL



## NEW ITEMS

ORDER BY MAIL

NEW



MANTIS

NOW WITH DUAL INTERNAL  
EXPANDING BRAKES — FULL STEERING WHEEL  
CUSTOM MODEL AT AN HONEST PRICE

WHY PAY  
MORE?



- DUAL BRAKES
- UPHOLSTERED
- ASSEMBLED
- PAINTED
- READY TO GO!

WITH 2½ H.P. CLINTON A400 ENGINE

As Shown

\$149.95

ADD \$15.00 IF AUTOMATIC CLUTCH DESIRED  
SEND \$25.00 DEPOSIT ON C.O.D.

SEND 25c TO BOX M1904 FOR COLOR BROCHURE.

CUSTOM OR ROD  
NOW SEE THIS!

FITS ANY  
28-48 FORD  
STEERING  
COLUMN  
COMPLETE  
WITH  
HUB COVER

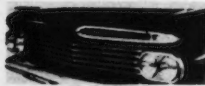


NEW!  
\$11.95

HONEST NO. H-7

## MODERNIZE WITH HONESTENITE STEERING WHEEL

New Two-Spoke, Recessed, Sturdy, Steel Reinforced "Safety Type" Wheel. All Steel Parts Plated For Protection Against Salt Water Corrosion. Colors: Clear Gold Flecked Tenite and White or Gold Flecked and Black. Colors Will Not Fade or Wear Off. Also Available In 2 or 3 Spoke Recessed Style of Rubber In Red and White, Blue and White and Bronze and White EACH 9.95

HONEST BAR AND GRILLE PRODUCTS  
Stainless Steel TUBE GRILLS

59 CHEVY



58 T BIRD



57 CHEVY



52 FORD



54 FORD



58 FORD



55 CHEVY



55-56 FORD



53 FORD

At The Price You've Waited For.  
Sweeping Tubular Stainless Grille  
Bars Completely Pre-Assembled. Guar-  
anteed Rust Proof — Full ¾" diameter  
sections. Available For 52-59 Ford —  
55-59 Chevrolet — 58 T Bird. Must  
Know Kind of Car and Year Model.

KOLOR KROME



Transparent Coloring for  
Chrome — The (Mirror  
like) reflection of chrome  
shows through —

4 Dazzling Colors in  
16 oz. Spray Can  
HONEST'S No.  
KK-1 Pagan Gold  
KK-2 Candy Apple Red  
KK-3 Oriental Blue  
KK-4 Parisian Green  
16 oz. Can \$1.98  
We Pay Postage

HONEST KART  
SPUN ALUMINUM  
Racing Wheel Disc  
FOR ALL TYPES KARTS  
4", 5" or 6"  
Heavy gauge  
Complete  
With  
Mounting  
Screws  
Each \$1.00  
Must Know Wheel Size  
We Pay Postage  
HONEST No. H-5

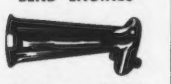
NEW LOW PRICE  
MAKE  
WHITEWALLS  
OUT OF  
BLACKWALLS  
13" - 14"  
15" - 16"  
Give Wheel  
Size  
BEST QUALITY  
\$3.95 Set of 4  
HONEST No. 9  
We Pay Postage

TUNED EXHAUST  
FOR A400-A490  
CLINTON AND WEST  
BEND ENGINES



Gleaming Polished  
Aluminum with  
Flared Ends  
Adds Horses —  
Increases Power  
Best Quality and  
Appearance Available at  
Any Price  
No. H-8 Each \$5.95

"CHROME DOME"  
OIL BREATHING CAP



Fits:  
Buick — 1953-55  
Cadillac — 1937-60  
Chevrolet V-8 — 1955-60  
Chrysler — 1937-60  
De Soto — 1937-60  
Dodge — 1937-60  
Ford — 1949-60  
Lincoln — 1954-60  
Mercury — 1949-60  
Oldsmobile — 1949-60  
Plymouth — 1937-60  
Pontiac — 1937-54  
Studebaker — 1955-60  
No. H-10 Each \$1.95  
We Pay Postage

HONEST SOM-RAY WHEEL SPUN ALUMINUM DISC



No. 49 Screw on Type Wheel  
We Pay Postage on Screw On  
No. 49A Snap on Type Like Reg. Wheel Covers  
You Pay Postage On Snap On



HEAT RESISTANT  
ENGINE ENAMEL  
½ Pint  
\$1.00 Postpaid  
RED - BLUE - GREEN  
GRAY - BLACK  
ALUMINUM  
HONEST No. 12



Honest No. H-3

\$1.95

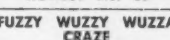
We Pay Postage

HONEST PIN STRIPE



12 Separate Designs  
Per Set  
Colors: Red, Gold,  
White, Black  
Each set of 12 Designs  
only \$1.00 postpaid  
HONEST No. 39

FUZZY WUZZY WUZZA  
CRAZE  
The Latest Craze  
From California  
FUZZY MIRROR - MUFFS  
Made of Oh so Soft,  
Fluffy, Angora Type Fur.  
One Size Fits Nearly  
All Inside Mirrors



HONEST  
No. H-4 EACH — \$1.00  
We Pay Postage



SEND 25c DEPOSIT ON C.O.D.  
SEND FULL AMOUNT ON ITEMS MARKED PREPAID  
NO C.O.D.'s FOR LESS THAN \$5.00. 5-60

My car is a ..... Year  
Name .....  
Address .....  
City ..... State .....

Quantity Part No. Description Price

Quantity Part No. Description Price

Quantity Part No. Description Price

Quantity Part No. Description Price

Both Street Type with  
self locking rings and  
our famous Drag Wheel  
Disc with holes already  
drilled and complete  
with screws and lock  
washers.  
14" 15" or 16"  
Must Know Wheel Size  
Each \$2.70

CROSS CHECKED FLAG  
4-BAR SPINNER WHEEL  
COVERS WITH CHECKED  
BACKGROUND  
14" - 15" - 16"



HEAVY CONSTRUCTION  
SPACE FOR WEIGHTS  
HONEST No. 82  
Set of Four . . . \$29.95  
Set of Two . . . 15.00  
State Size of Wheels

STAR FIRE SPINNER



For All Hub Caps—easily  
attached with screws

HONEST No. 77  
Each \$1.95  
We Pay Postage

58-59 CHEVROLET REAR  
LOWERING KIT

Adjustable  
from 2" to  
4" drop.  
Easily in-  
stalled in  
minutes.  
HCK9  
Each Kit Complete \$4.95  
We Pay Postage



SEND 25c FOR NEW  
1960 MONEY SAVER  
CATALOG — CONTAINS  
\$1.00 FREE CERTIFI-  
CATE. GET NEXT ISSUE  
FREE.



SEND 25c FOR NEW  
1960 MONEY SAVER  
CATALOG — CONTAINS  
\$1.00 FREE CERTIFI-  
CATE. GET NEXT ISSUE  
FREE.

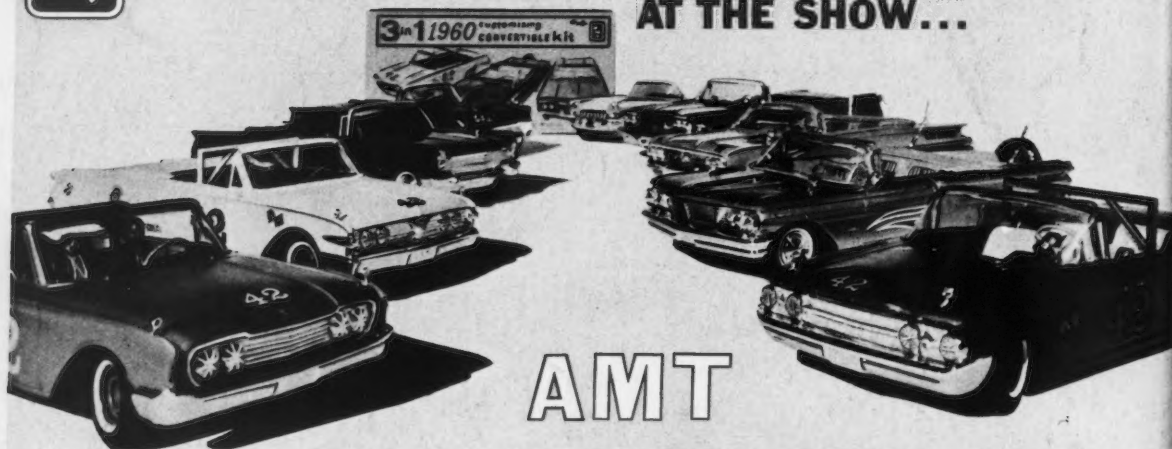
GIVE YEAR AND MODEL CAR WHEN ORDERING  
HONEST NO. 87 Completely Pre-Assembled Kit ONLY \$19.95  
YOU PAY EXPRESS CHARGES

HONEST CHARLEY SPEED SHOP INC.

Box CC 1904  
Chattanooga Tenn



**ON THE STRIP...  
AT THE SHOW...**



**AMT  
IS ON THE GO!**

An AMT **3 in 1** Customizing kit makes it possible for you to build any one of three different cars—for the road—for the show—for the track. More than just an ordinary shelf model, this finely detailed kit has a one piece body, moulded clear windows, metal axles, white sidewall tires and chrome bumpers and accessories. Remember, each car has its own customized accessories.

Use these typical customizing accessories in designing and building your own personalized "bomb".

AERIALS  
SPOTLIGHTS  
LAKE PIPES  
CONTINENTAL TIRE  
TACHOMETER  
OIL & AMP GAUGES  
LOUVERS  
TUBULAR GRILLE BARS

CUSTOM WHEEL DISCS  
ROLL BARS  
BUBBLE SKIRTS  
MOON DISCS  
LOWERING BLOCKS  
LICENSE PLATE  
FLOOR SHIFT

SCOOPS  
FINS  
EXHAUST EXTENSIONS  
FENDER MIRRORS  
CONTINENTAL EXTENSION  
TONNEAU COVERS  
SCALLOPING, PIN STRIPING,  
FLAME DECALS & CUSTOM NAMES

**AMT KITS AVAILABLE IN 1960:**

**\$1.39**  
FORD SUNLINER  
EDSEL  
MERCURY PARK LANE  
CONTINENTAL MARK V  
PONTIAC BONNEVILLE  
CHEVROLET IMPALA  
IMPERIAL

**\$1.49**  
"WITH ENGINES"  
THUNDERBIRD  
BUICK  
CORVETTE  
MODEL T FORD ROADSTER  
(the "T"-BUCKET)  
1932 FORD ROADSTER  
1932 FORD V-8 FIVE WINDOW COUPE  
1940 FORD COUPE

**\$1.49**  
CHEVROLET EL CAMINO  
CUSTOMIZING BOAT KIT

**\$1.98**  
FORD F100 PICKUP  
CHEV. APACHE PICKUP

**THE 1960 CARS ARE ALSO AVAILABLE AS BUILT UP FRICTION POWERED MODELS AT \$1.98**

Remember: you can get these models at your nearest Hobby Shop or Department Store everywhere.

If unavailable write to:

**AMT** CORPORATION 21535 Groesbeck Hwy., Warren, Michigan

